

Kamke differential equations. Mathematica 10.3.1 and Maple 2015

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2.1726	ODE No. 1726	769
2.1727	ODE No. 1727	769
2.1728	ODE No. 1728	770
2.1729	ODE No. 1729	770
2.1730	ODE No. 1730	770
2.1731	ODE No. 1731	771
2.1732	ODE No. 1732	771
2.1733	ODE No. 1733	771
2.1734	ODE No. 1734	772
2.1735	ODE No. 1735	772
2.1736	ODE No. 1736	773
2.1737	ODE No. 1737	773
2.1738	ODE No. 1738	773
2.1739	ODE No. 1739	774

2.1740	ODE No. 1740	774
2.1741	ODE No. 1741	774
2.1742	ODE No. 1742	775
2.1743	ODE No. 1743	775
2.1744	ODE No. 1744	775
2.1745	ODE No. 1745	776
2.1746	ODE No. 1746	776
2.1747	ODE No. 1747	776
2.1748	ODE No. 1748	777
2.1749	ODE No. 1749	777
2.1750	ODE No. 1750	777
2.1751	ODE No. 1751	778
2.1752	ODE No. 1752	778
2.1753	ODE No. 1753	779
2.1754	ODE No. 1754	779
2.1755	ODE No. 1755	779
2.1756	ODE No. 1756	780
2.1757	ODE No. 1757	780
2.1758	ODE No. 1758	780
2.1759	ODE No. 1759	781
2.1760	ODE No. 1760	781
2.1761	ODE No. 1761	781
2.1762	ODE No. 1762	782
2.1763	ODE No. 1763	782
2.1764	ODE No. 1764	782
2.1765	ODE No. 1765	783
2.1766	ODE No. 1766	783
2.1767	ODE No. 1767	783
2.1768	ODE No. 1768	784
2.1769	ODE No. 1769	784
2.1770	ODE No. 1770	784
2.1771	ODE No. 1771	785
2.1772	ODE No. 1772	785
2.1773	ODE No. 1773	785
2.1774	ODE No. 1774	786
2.1775	ODE No. 1775	786
2.1776	ODE No. 1776	786
2.1777	ODE No. 1777	787
2.1778	ODE No. 1778	787

2.1779	ODE No. 1779	787
2.1780	ODE No. 1780	788
2.1781	ODE No. 1781	788
2.1782	ODE No. 1782	788
2.1783	ODE No. 1783	789
2.1784	ODE No. 1784	789
2.1785	ODE No. 1785	789
2.1786	ODE No. 1786	790
2.1787	ODE No. 1787	790
2.1788	ODE No. 1788	790
2.1789	ODE No. 1789	791
2.1790	ODE No. 1790	791
2.1791	ODE No. 1791	791
2.1792	ODE No. 1792	792
2.1793	ODE No. 1793	792
2.1794	ODE No. 1794	793
2.1795	ODE No. 1795	793
2.1796	ODE No. 1796	794
2.1797	ODE No. 1797	794
2.1798	ODE No. 1798	794
2.1799	ODE No. 1799	795
2.1800	ODE No. 1800	795
2.1801	ODE No. 1801	795
2.1802	ODE No. 1802	796
2.1803	ODE No. 1803	796
2.1804	ODE No. 1804	796
2.1805	ODE No. 1805	797
2.1806	ODE No. 1806	797
2.1807	ODE No. 1807	797
2.1808	ODE No. 1808	798
2.1809	ODE No. 1809	798
2.1810	ODE No. 1810	798
2.1811	ODE No. 1811	799
2.1812	ODE No. 1812	799
2.1813	ODE No. 1813	800
2.1814	ODE No. 1814	800
2.1815	ODE No. 1815	800
2.1816	ODE No. 1816	801
2.1817	ODE No. 1817	801

2.1818	ODE No. 1818	801
2.1819	ODE No. 1819	802
2.1820	ODE No. 1820	802
2.1821	ODE No. 1821	802
2.1822	ODE No. 1822	803
2.1823	ODE No. 1823	803
2.1824	ODE No. 1824	804
2.1825	ODE No. 1825	804
2.1826	ODE No. 1826	804
2.1827	ODE No. 1827	805
2.1828	ODE No. 1828	805
2.1829	ODE No. 1829	805
2.1830	ODE No. 1830	806
2.1831	ODE No. 1831	806
2.1832	ODE No. 1832	806
2.1833	ODE No. 1833	807
2.1834	ODE No. 1834	807
2.1835	ODE No. 1835	807
2.1836	ODE No. 1836	808
2.1837	ODE No. 1837	808
2.1838	ODE No. 1838	808
2.1839	ODE No. 1839	809
2.1840	ODE No. 1840	809
2.1841	ODE No. 1841	809
2.1842	ODE No. 1842	810
2.1843	ODE No. 1843	810
2.1844	ODE No. 1844	811
2.1845	ODE No. 1845	811
2.1846	ODE No. 1846	811
2.1847	ODE No. 1847	812
2.1848	ODE No. 1848	812
2.1849	ODE No. 1849	812
2.1850	ODE No. 1850	813
2.1851	ODE No. 1851	813
2.1852	ODE No. 1852	813
2.1853	ODE No. 1853	814
2.1854	ODE No. 1854	814
2.1855	ODE No. 1855	814
2.1856	ODE No. 1856	814

2.1857	ODE No. 1857	815
2.1858	ODE No. 1858	815
2.1859	ODE No. 1859	815
2.1860	ODE No. 1860	816
2.1861	ODE No. 1861	816
2.1862	ODE No. 1862	816
2.1863	ODE No. 1863	817
2.1864	ODE No. 1864	817
2.1865	ODE No. 1865	817
2.1866	ODE No. 1866	818
2.1867	ODE No. 1867	818
2.1868	ODE No. 1868	818
2.1869	ODE No. 1869	819
2.1870	ODE No. 1870	819
2.1871	ODE No. 1871	819
2.1872	ODE No. 1872	820
2.1873	ODE No. 1873	820
2.1874	ODE No. 1874	820
2.1875	ODE No. 1875	821
2.1876	ODE No. 1876	821
2.1877	ODE No. 1877	821
2.1878	ODE No. 1878	822
2.1879	ODE No. 1879	822
2.1880	ODE No. 1880	822
2.1881	ODE No. 1881	823
2.1882	ODE No. 1882	823
2.1883	ODE No. 1883	823
2.1884	ODE No. 1884	824
2.1885	ODE No. 1885	824
2.1886	ODE No. 1886	824
2.1887	ODE No. 1887	825
2.1888	ODE No. 1888	825
2.1889	ODE No. 1889	825
2.1890	ODE No. 1890	826
2.1891	ODE No. 1891	826
2.1892	ODE No. 1892	826
2.1893	ODE No. 1893	827
2.1894	ODE No. 1894	827
2.1895	ODE No. 1895	827

2.1896	ODE No. 1896	828
2.1897	ODE No. 1897	828
2.1898	ODE No. 1898	828
2.1899	ODE No. 1899	829
2.1900	ODE No. 1900	829
2.1901	ODE No. 1901	829
2.1902	ODE No. 1902	830
2.1903	ODE No. 1903	830
2.1904	ODE No. 1904	830
2.1905	ODE No. 1905	831
2.1906	ODE No. 1906	831
2.1907	ODE No. 1907	831
2.1908	ODE No. 1908	832
2.1909	ODE No. 1909	832
2.1910	ODE No. 1910	832
2.1911	ODE No. 1911	833
2.1912	ODE No. 1912	833
2.1913	ODE No. 1913	833
2.1914	ODE No. 1914	834
2.1915	ODE No. 1915	835
2.1916	ODE No. 1916	835
2.1917	ODE No. 1917	835
2.1918	ODE No. 1918	836
2.1919	ODE No. 1919	836
2.1920	ODE No. 1920	836
2.1921	ODE No. 1921	837
2.1922	ODE No. 1922	837
2.1923	ODE No. 1923	837
2.1924	ODE No. 1924	838
2.1925	ODE No. 1925	838
2.1926	ODE No. 1926	838
2.1927	ODE No. 1927	839
2.1928	ODE No. 1928	839
2.1929	ODE No. 1929	839
2.1930	ODE No. 1930	840
2.1931	ODE No. 1931	840
2.1932	ODE No. 1932	841
2.1933	ODE No. 1933	841
2.1934	ODE No. 1934	841

2.1935	ODE No. 1935	842
2.1936	ODE No. 1936	842
2.1937	ODE No. 1937	842
2.1938	ODE No. 1938	843
2.1939	ODE No. 1939	843
2.1940	ODE No. 1940	843

1 Introduction and summary of results

This report gives the result of solving the 1,940 differential equations from Kamke book in Mathematica 10.3.1 and Maple 2015 on windows 7, 64 bit OS. The PC used is an Intel i7-3930k running at 3.20 GHz with 16 GB memory.

The command `AbsoluteTiming[]` was used in Mathematica to obtain the CPU time. In Maple the following commands were used for this purpose

```
t0 := time[real]():
timeOut := 5*60;
result_of_solve := timelimit(timeOut,dsolve(ode[i]));
cpu_time := time[real]()-t0:
```

Both Maple and Mathematica had a CPU time limit of 5 minutes to complete each problem else the problem is considered not solved and marked as timed out.

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	75.98	28.32	2197.54	915.79	
Maple	92.16	0.49	300.37	15.97	

Table 1: Summary of final results

Table 2 summarizes the Kamke equations used

The following summarizes which equations are solved by each system

Not solved by Mathematica 16, 22, 38, 47, 48, 49, 50, 55, 56, 63, 66, 74, 79, 80, 81, 82, 83, 86, 87, 110, 121, 127, 188, 202, 203, 205, 206, 219, 234, 237, 250, 253, 265, 266, 269, 331, 340, 365, 367, 368, 370, 383, 385, 394, 395, 400, 402, 404, 413, 414, 416, 428, 429, 451, 452, 460, 461, 465, 467, 468, 470, 476, 479, 480, 482, 485, 487, 489, 494, 503, 504, 506, 508, 510, 513, 515, 523, 524, 527, 528, 530, 531, 532, 533, 534, 535, 537, 538, 541, 542, 543, 544, 546, 550, 555, 561, 562, 566, 567, 570, 572, 575, 576, 592, 607, 613, 620, 638, 639, 640, 672, 696, 701, 702, 703, 704, 706, 707, 710, 714, 730, 733, 735, 743, 745, 746, 747, 752, 759, 765, 766, 769, 776, 782, 783, 784, 785, 786, 788, 789, 790, 791, 792, 807, 835, 837, 854, 855, 862, 865, 885, 889, 892, 894, 909, 913, 915, 916, 917, 918, 919, 922, 923, 925, 929, 932, 942, 953, 961, 993, 996, 1000, 1015, 1019, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1038, 1072,

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 2: Kamke equation numbering

1073, 1074, 1075, 1076, 1077, 1080, 1081, 1082, 1083, 1084, 1085, 1099, 1126, 1128, 1156, 1157, 1177, 1205, 1212, 1216, 1219, 1232, 1233, 1236, 1248, 1261, 1263, 1267, 1268, 1270, 1278, 1303, 1306, 1323, 1329, 1330, 1341, 1343, 1348, 1362, 1367, 1372, 1373, 1398, 1402, 1403, 1406, 1407, 1408, 1413, 1418, 1419, 1427, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1450, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1470, 1471, 1472, 1473, 1474, 1476, 1482, 1484, 1487, 1489, 1500, 1505, 1506, 1507, 1510, 1515, 1516, 1520, 1526, 1527, 1529, 1530, 1531, 1540, 1541, 1542, 1543, 1544, 1547, 1552, 1569, 1572, 1573, 1574, 1575, 1576, 1578, 1581, 1586, 1590, 1593, 1595, 1596, 1598, 1599, 1601, 1603, 1605, 1606, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1628, 1629, 1631, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1642, 1643, 1644, 1645, 1648, 1649, 1652, 1656, 1658, 1659, 1660, 1662, 1663, 1664, 1665, 1666, 1667, 1672, 1673, 1675, 1677, 1678, 1680, 1681, 1682, 1684, 1685, 1686, 1690, 1691, 1692, 1693, 1695, 1696, 1702, 1704, 1705, 1706, 1708, 1709, 1710, 1711, 1713, 1719, 1720, 1721, 1729, 1732, 1734, 1735, 1737, 1738, 1739, 1742, 1746, 1751, 1755, 1757, 1760, 1761, 1762, 1776, 1777, 1779, 1780, 1787, 1788, 1789, 1797, 1798, 1801, 1802, 1806, 1807, 1809, 1811, 1813, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1823, 1825, 1827, 1831, 1832, 1833, 1834, 1836, 1837, 1838, 1839, 1840, 1841, 1844, 1845, 1848, 1850, 1851, 1853, 1854, 1855, 1875, 1880, 1885, 1890, 1893, 1894, 1905, 1911, 1912, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1925, 1926, 1927, 1928, 1929, 1932, 1933, 1934, 1935, 1936, 1937, 1939, 1940

Not solved by Maple 38, 47, 48, 49, 50, 55, 56, 74, 79, 82, 87, 110, 121, 202, 203, 205, 206, 219, 234, 237, 250, 253, 265, 269, 331, 340, 367, 368, 370, 383, 395, 460, 461, 480, 482, 485, 503, 506, 507, 510, 531, 572, 575, 576, 733, 789, 790, 835, 837,

885, 894, 920, 1015, 1019, 1026, 1028, 1030, 1031, 1038, 1072, 1073, 1075, 1076, 1077, 1081, 1157, 1205, 1212, 1216, 1234, 1236, 1278, 1408, 1439, 1440, 1441, 1443, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1473, 1474, 1476, 1484, 1489, 1510, 1515, 1531, 1540, 1541, 1542, 1543, 1581, 1582, 1586, 1593, 1595, 1596, 1598, 1599, 1606, 1608, 1609, 1617, 1619, 1623, 1625, 1628, 1634, 1642, 1643, 1645, 1649, 1675, 1685, 1698, 1702, 1704, 1705, 1706, 1721, 1729, 1732, 1734, 1735, 1737, 1738, 1739, 1751, 1757, 1761, 1788, 1789, 1797, 1801, 1802, 1807, 1835, 1851, 1854, 1855, 1890, 1905, 1921, 1922, 1927, 1928, 1940

Solved by Mathematica but not by Maple 507, 920, 1234, 1582, 1698, 1835

Solved by Maple but not by Mathematica 16, 22, 63, 66, 80, 81, 83, 86, 127, 188, 266, 365, 385, 394, 400, 402, 404, 413, 414, 416, 428, 429, 451, 452, 465, 467, 468, 470, 476, 479, 487, 489, 494, 504, 508, 513, 515, 523, 524, 527, 528, 530, 532, 533, 534, 535, 537, 538, 541, 542, 543, 544, 546, 550, 555, 561, 562, 566, 567, 570, 592, 607, 613, 620, 638, 639, 640, 672, 696, 701, 702, 703, 704, 706, 707, 710, 714, 730, 735, 743, 745, 746, 747, 752, 759, 765, 766, 769, 776, 782, 783, 784, 785, 786, 788, 791, 792, 807, 854, 855, 862, 865, 889, 892, 909, 913, 915, 916, 917, 918, 919, 922, 923, 925, 929, 932, 942, 953, 961, 993, 996, 1000, 1027, 1029, 1032, 1074, 1080, 1082, 1083, 1084, 1085, 1099, 1126, 1128, 1156, 1177, 1219, 1232, 1233, 1248, 1261, 1263, 1267, 1268, 1270, 1303, 1306, 1323, 1329, 1330, 1341, 1343, 1348, 1362, 1367, 1372, 1373, 1398, 1402, 1403, 1406, 1407, 1413, 1418, 1419, 1427, 1442, 1444, 1445, 1450, 1470, 1471, 1472, 1482, 1487, 1500, 1505, 1506, 1507, 1516, 1520, 1526, 1527, 1529, 1530, 1544, 1547, 1552, 1569, 1572, 1573, 1574, 1575, 1576, 1578, 1590, 1601, 1603, 1605, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1618, 1620, 1621, 1622, 1624, 1626, 1627, 1629, 1631, 1633, 1635, 1636, 1637, 1638, 1639, 1640, 1644, 1648, 1652, 1656, 1658, 1659, 1660, 1662, 1663, 1664, 1665, 1666, 1667, 1672, 1673, 1677, 1678, 1680, 1681, 1682, 1684, 1686, 1690, 1691, 1692, 1693, 1695, 1696, 1708, 1709, 1710, 1711, 1713, 1719, 1720, 1742, 1746, 1755, 1760, 1762, 1776, 1777, 1779, 1780, 1787, 1798, 1806, 1809, 1811, 1813, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1823, 1825, 1827, 1831, 1832, 1833, 1834, 1836, 1837, 1838, 1839, 1840, 1841, 1844, 1845, 1848, 1850, 1853, 1875, 1880, 1885, 1893, 1894, 1911, 1912, 1915, 1916, 1917, 1918, 1919, 1920, 1925, 1926, 1929, 1932, 1933, 1934, 1935, 1936, 1937, 1939

Solved by both Maple and Mathematica 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 41, 42, 43, 44, 45, 46, 51, 52, 53, 54, 57, 58, 59, 60, 61, 62, 64, 65, 67, 68, 69, 70, 71, 72, 73, 75, 76, 77, 78, 84, 85, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 122, 123, 124, 125, 126, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150,

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Both systems unable to solve 38, 47, 48, 49, 50, 55, 56, 74, 79, 82, 87, 110, 121, 202, 203, 205, 206, 219, 234, 237, 250, 253, 265, 269, 331, 340, 367, 368, 370, 383, 395, 460, 461, 480, 482, 485, 503, 506, 510, 531, 572, 575, 576, 733, 789, 790, 835, 837, 885, 894, 1015, 1019, 1026, 1028, 1030, 1031, 1038, 1072, 1073, 1075, 1076, 1077, 1081, 1157, 1205, 1212, 1216, 1236, 1278, 1408, 1439, 1440, 1441, 1443, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1473, 1474, 1476, 1484, 1489, 1510, 1515, 1531, 1540, 1541, 1542, 1543, 1581, 1586, 1593, 1595, 1596, 1598, 1599, 1606, 1608, 1609, 1617, 1619, 1623, 1625, 1628, 1634, 1642, 1643, 1645, 1649, 1675, 1685, 1702, 1704, 1705, 1706, 1721, 1729, 1732, 1734, 1735, 1737, 1738, 1739, 1751, 1757, 1761, 1788, 1789, 1797, 1801, 1802, 1807, 1851, 1854, 1855, 1890, 1905, 1921, 1922, 1927, 1928, 1940

2 Problems table lookup

Final conclusion table for each equation is given by table 3 below. Clicking on the problem opens a new page that shows the result and links to download each problem as well.

Table 3: Breakdown of results for each Kamke differential equation

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1	✓	0.695	1117	✓	0.026	1089
Kamke 2	✓	0.027	34	✓	0.013	25
Kamke 3	✓	0.048	40	✓	0.023	37
Kamke 4	✓	0.01	30	✓	0.007	18
Kamke 5	✓	3.181	38	✓	0.076	27
Kamke 6	✓	0.023	18	✓	0.021	15
Kamke 7	✓	0.023	23	✓	0.007	19
Kamke 8	✓	0.025	17	✓	0.013	15
Kamke 9	✓	0.017	19	✓	0.01	16
Kamke 10	✓	0.009	18	✓	0.011	15
Kamke 11	✓	0.472	62	✓	0.019	24
Kamke 12	✓	0.044	34	✓	0.033	8
Kamke 13	✓	0.042	79	✓	0.147	79
Kamke 14	✓	0.03	254	✓	0.108	187
Kamke 15	✓	0.021	25	✓	0.177	37
Kamke 16	✗	0	0	✓	0.111	50
Kamke 17	✓	0.024	34	✓	0.112	25
Kamke 18	✓	0.041	50	✓	0.078	47
Kamke 19	✓	0.011	30	✓	0.04	16
Kamke 20	✓	0.773	48	✓	0.081	34
Kamke 21	✓	6.526	69	✓	0.126	25
Kamke 22	✗	0	0	✓	0.372	198
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 23	✓	0.021	43	✓	0.039	29
Kamke 24	✓	0.014	277	✓	0.067	216
Kamke 25	✓	0.233	1835	✓	0.307	378
Kamke 26	✓	0.077	68	✓	0.07	59
Kamke 27	✓	0.045	120	✓	0.186	71
Kamke 28	✓	0.048	96	✓	0.086	67
Kamke 29	✓	0.022	39	✓	0.013	19
Kamke 30	✓	0.066	230	✓	0.088	81
Kamke 31	✓	0.03	21	✓	0.04	26
Kamke 32	✓	0.142	34	✓	0.264	28
Kamke 33	✓	27.025	157	✓	0.486	57
Kamke 34	✓	0.51	51	✓	0.029	28
Kamke 35	✓	0.058	60	✓	0.044	45
Kamke 36	✓	0.21	195	✓	0.091	62
Kamke 37	✓	0.668	78	✓	0.099	50
Kamke 38	✗	0	0	✗	0	0
Kamke 39	✓	0.036	54	✓	0.014	30
Kamke 40	✓	0.232	185	✓	0.072	48
Kamke 41	✓	0.077	103	✓	0.214	103
Kamke 42	✓	0.921	485	✓	0.027	40
Kamke 43	✓	8.395	490	✓	2.096	384
Kamke 44	✓	0.017	72	✓	0.023	53
Kamke 45	✓	0.51	133	✓	0.12	123
Kamke 46	✓	0.245	258	✓	0.129	1052
Kamke 47	✗	0	0	✗	0	0
Kamke 48	✗	0	0	✗	0	0
Kamke 49	✗	0	0	✗	0	0
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 50	✗	0	0	✗	0	0
Kamke 51	✓	0.742	354	✓	0.221	2348
Kamke 52	✓	143.361	115	✓	0.211	61
Kamke 53	✓	79.208	95	✓	0.063	281
Kamke 54	✓	0.117	74	✓	0.174	42
Kamke 55	✗	0	0	✗	0	0
Kamke 56	✗	0	0	✗	0	0
Kamke 57	✓	96.735	283	✓	0.109	31
Kamke 58	✓	0.155	119	✓	0.076	68
Kamke 59	✓	0.18	96	✓	0.052	26
Kamke 60	✓	0.05	55	✓	0.017	29
Kamke 61	✓	0.176	75	✓	0.014	50
Kamke 62	✓	3.76	40	✓	0.406	34
Kamke 63	✗	0	0	✓	0.135	35
Kamke 64	✓	0.175	269	✓	0.084	124
Kamke 65	✓	1.494	312	✓	0.046	47
Kamke 66	✗	0	0	✓	0.077	139
Kamke 67	✓	0.132	14	✓	0.015	51
Kamke 68	✓	1.028	373	✓	0.059	77
Kamke 69	✓	50.284	12750	✓	0.154	111
Kamke 70	✓	147.173	23353	✓	0.165	113
Kamke 71	✓	2.334	2237	✓	0.126	113
Kamke 72	✓	0.815	87	✓	0.013	64
Kamke 73	✓	1.009	733	✓	0.277	91
Kamke 74	✗	0	0	✗	0	0
Kamke 75	✓	0.041	18	✓	0.135	20
Kamke 76	✓	0.15	116	✓	0.049	54
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 77	✓	0.308	124	✓	0.075	65
Kamke 78	✓	0.833	1317	✓	1.056	118
Kamke 79	✗	0	0	✗	0	0
Kamke 80	✗	0	0	✓	1.49	41
Kamke 81	✗	0	0	✓	1.296	78
Kamke 82	✗	0	0	✗	0	0
Kamke 83	✗	0	0	✓	0.443	44
Kamke 84	✓	8.498	244	✓	0.04	37
Kamke 85	✓	155.644	235	✓	0.461	153
Kamke 86	✗	0	0	✓	0.444	52
Kamke 87	✗	0	0	✗	0	0
Kamke 88	✓	0.28	2831	✓	0.226	420
Kamke 89	✓	0.032	48	✓	0.016	56
Kamke 90	✓	0.014	24	✓	0.013	17
Kamke 91	✓	0.007	15	✓	0.007	11
Kamke 92	✓	0.012	15	✓	0.007	13
Kamke 93	✓	0.02	16	✓	0.015	14
Kamke 94	✓	0.015	25	✓	0.01	23
Kamke 95	✓	0.015	32	✓	0.073	40
Kamke 96	✓	0.022	33	✓	0.033	11
Kamke 97	✓	0.026	46	✓	0.033	31
Kamke 98	✓	0.025	442	✓	0.052	38
Kamke 99	✓	0.018	244	✓	0.115	237
Kamke 100	✓	0.009	157	✓	0.083	59
Kamke 101	✓	0.009	18	✓	0.013	16
Kamke 102	✓	0.02	36	✓	0.039	24
Kamke 103	✓	0.097	90	✓	0.034	29
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 104	✓	0.016	43	✓	0.072	63
Kamke 105	✓	0.185	473	✓	0.322	844
Kamke 106	✓	0.038	40	✓	0.044	42
Kamke 107	✓	0.262	1415	✓	0.234	176
Kamke 108	✓	0.011	15	✓	0.013	13
Kamke 109	✓	0.011	17	✓	0.014	15
Kamke 110	✗	0	0	✗	0	0
Kamke 111	✓	0.282	55	✓	0.128	54
Kamke 112	✓	0.021	13	✓	0.038	27
Kamke 113	✓	0.023	16	✓	0.029	33
Kamke 114	✓	0.02	12	✓	1.938	28
Kamke 115	✓	0.121	99	✓	0.223	49
Kamke 116	✓	0.433	143	✓	0.216	151
Kamke 117	✓	0.026	21	✓	0.102	20
Kamke 118	✓	0.011	13	✓	0.048	8
Kamke 119	✓	0.029	17	✓	0.058	14
Kamke 120	✓	0.051	20	✓	0.165	17
Kamke 121	✗	0	0	✗	0	0
Kamke 122	✓	0.071	21	✓	0.456	16
Kamke 123	✓	0.057	19	✓	0.049	44
Kamke 124	✓	0.027	16	✓	0.03	12
Kamke 125	✓	0.038	16	✓	0.057	14
Kamke 126	✓	14.787	112	✓	0.023	29
Kamke 127	✗	0	0	✓	0.109	39
Kamke 128	✓	4.292	39	✓	0.273	33
Kamke 129	✓	0.028	44	✓	0.031	41
Kamke 130	✓	0.007	21	✓	0.009	15
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 131	✓	0.018	20	✓	0.175	34
Kamke 132	✓	0.012	115	✓	0.029	234
Kamke 133	✓	0.007	27	✓	0.01	16
Kamke 134	✓	0.011	27	✓	0.009	17
Kamke 135	✓	0.007	14	✓	0.007	11
Kamke 136	✓	0.013	28	✓	0.019	18
Kamke 137	✓	0.009	16	✓	0.015	15
Kamke 138	✓	0.014	13	✓	0.033	11
Kamke 139	✓	0.13	821	✓	0.139	296
Kamke 140	✓	0.01	17	✓	0.046	23
Kamke 141	✓	0.027	67	✓	0.053	64
Kamke 142	✓	0.187	113	✓	0.091	61
Kamke 143	✓	0.01	51	✓	0.047	49
Kamke 144	✓	0.171	1787	✓	0.109	244
Kamke 145	✓	0.385	267	✓	0.118	117
Kamke 146	✓	0.503	78	✓	0.17	82
Kamke 147	✓	0.51	343	✓	0.202	178
Kamke 148	✓	0.012	30	✓	0.01	16
Kamke 149	✓	0.012	27	✓	0.01	20
Kamke 150	✓	0.008	30	✓	0.007	19
Kamke 151	✓	0.425	203	✓	0.057	85
Kamke 152	✓	0.232	40	✓	0.782	25
Kamke 153	✓	0.017	21	✓	0.017	20
Kamke 154	✓	0.014	26	✓	0.012	16
Kamke 155	✓	0.017	46	✓	0.114	14
Kamke 156	✓	0.015	21	✓	0.017	20
Kamke 157	✓	0.086	158	✓	0.266	231
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 158	✓	0.035	31	✓	0.017	22
Kamke 159	✓	0.017	22	✓	0.102	13
Kamke 160	✓	0.02	27	✓	0.034	29
Kamke 161	✓	0.014	53	✓	0.017	27
Kamke 162	✓	0.26	133	✓	0.194	128
Kamke 163	✓	0.013	43	✓	0.036	26
Kamke 164	✓	0.08	131	✓	0.216	102
Kamke 165	✓	0.017	22	✓	0.023	17
Kamke 166	✓	0.1	71	✓	0.161	97
Kamke 167	✓	0.022	35	✓	0.033	20
Kamke 168	✓	0.093	234	✓	0.191	140
Kamke 169	✓	2.175	149	✓	0.159	153
Kamke 170	✓	0.022	43	✓	0.019	23
Kamke 171	✓	0.01	17	✓	0.011	15
Kamke 172	✓	0.039	35	✓	0.292	26
Kamke 173	✓	0.016	29	✓	0.045	27
Kamke 174	✓	0.008	17	✓	0.004	13
Kamke 175	✓	0.02	24	✓	0.026	21
Kamke 176	✓	0.121	82	✓	0.105	45
Kamke 177	✓	0.016	22	✓	0.027	18
Kamke 178	✓	0.074	62	✓	0.129	63
Kamke 179	✓	1.659	2816	✓	0.159	145
Kamke 180	✓	0.123	132	✓	0.054	58
Kamke 181	✓	0.012	347	✓	0.08	30
Kamke 182	✓	0.172	96	✓	0.132	18
Kamke 183	✓	0.014	22	✓	0.014	18
Kamke 184	✓	1.468	704	✓	0.362	846
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 185	✓	0.374	123	✓	0.046	63
Kamke 186	✓	0.029	19	✓	0.036	17
Kamke 187	✓	0.07	328	✓	0.053	88
Kamke 188	✗	0	0	✓	0.024	32
Kamke 189	✓	82.253	90	✓	0.24	61
Kamke 190	✓	0.051	55	✓	0.01	29
Kamke 191	✓	0.031	52	✓	0.019	16
Kamke 192	✓	0.028	57	✓	0.019	36
Kamke 193	✓	0.009	16	✓	0.007	14
Kamke 194	✓	0.075	98	✓	0.024	23
Kamke 195	✓	0.056	27	✓	0.108	28
Kamke 196	✓	0.056	53	✓	0.105	23
Kamke 197	✓	0.042	98	✓	0.065	364
Kamke 198	✓	0.024	15	✓	0.016	15
Kamke 199	✓	0.186	15	✓	0.159	100
Kamke 200	✓	0.051	77	✓	0.057	56
Kamke 201	✓	0.076	38	✓	0.039	23
Kamke 202	✗	0	0	✗	0	0
Kamke 203	✗	0	0	✗	0	0
Kamke 204	✓	0.07	70	✓	0.279	91
Kamke 205	✗	0	0	✗	0	0
Kamke 206	✗	0	0	✗	0	0
Kamke 207	✓	0.012	47	✓	0.023	37
Kamke 208	✓	0.072	118	✓	0.069	116
Kamke 209	✓	0.022	84	✓	0.012	21
Kamke 210	✓	0.017	47	✓	0.02	33
Kamke 211	✓	38.799	40	✓	0.033	31
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 212	✓	21.84	92	✓	0.135	30
Kamke 213	✓	0.101	71	✓	0.652	73
Kamke 214	✓	0.109	78	✓	0.146	65
Kamke 215	✓	0.12	80	✓	0.174	68
Kamke 216	✓	0.102	82	✓	0.159	68
Kamke 217	✓	0.019	29	✓	0.033	23
Kamke 218	✓	0.099	257	✓	0.178	53
Kamke 219	✗	0	0	✗	0	0
Kamke 220	✓	0.014	57	✓	0.023	43
Kamke 221	✓	0.018	35	✓	0.05	21
Kamke 222	✓	0.057	65	✓	0.053	31
Kamke 223	✓	0.025	55	✓	0.145	53
Kamke 224	✓	0.018	29	✓	0.052	35
Kamke 225	✓	0.017	33	✓	0.047	20
Kamke 226	✓	0.017	35	✓	0.046	21
Kamke 227	✓	0.012	107	✓	0.155	38
Kamke 228	✓	0.288	3357	✓	0.3	377
Kamke 229	✓	0.012	121	✓	0.156	33
Kamke 230	✓	0.119	96	✓	0.042	104
Kamke 231	✓	2.541	252	✓	0.209	206
Kamke 232	✓	0.01	56	✓	0.019	39
Kamke 233	✓	0.024	38	✓	0.025	30
Kamke 234	✗	0	0	✗	0	0
Kamke 235	✓	0.041	40	✓	0.051	30
Kamke 236	✓	0.017	114	✓	0.062	147
Kamke 237	✗	0	0	✗	0	0
Kamke 238	✓	0.044	192	✓	0.081	133
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 239	✓	0.029	54	✓	0.155	59
Kamke 240	✓	0.01	41	✓	0.022	33
Kamke 241	✓	0.01	41	✓	0.016	33
Kamke 242	✓	0.015	60	✓	0.019	39
Kamke 243	✓	15.324	487	✓	0.131	493
Kamke 244	✓	15.226	484	✓	0.111	499
Kamke 245	✓	0.41	1453	✓	0.296	31
Kamke 246	✓	0.031	80	✓	0.069	63
Kamke 247	✓	15.258	693	✓	0.2	517
Kamke 248	✓	0.015	106	✓	0.026	71
Kamke 249	✓	5.047	115	✓	0.198	202
Kamke 250	✗	0	0	✗	0	0
Kamke 251	✓	0.013	60	✓	0.023	50
Kamke 252	✓	15.141	819	✓	0.805	1623
Kamke 253	✗	0	0	✗	0	0
Kamke 254	✓	0.017	99	✓	0.031	59
Kamke 255	✓	4.972	30	✓	0.207	74
Kamke 256	✓	0.02	21	✓	0.048	33
Kamke 257	✓	0.365	38	✓	0.115	98
Kamke 258	✓	0.014	43	✓	0.023	33
Kamke 259	✓	0.02	50	✓	0.027	51
Kamke 260	✓	0.015	80	✓	0.033	59
Kamke 261	✓	0.915	32	✓	0.112	18
Kamke 262	✓	0.067	101	✓	0.292	74
Kamke 263	✓	0.041	121	✓	0.147	207
Kamke 264	✓	0.363	680	✓	0.534	574
Kamke 265	✗	0	0	✗	0	0
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 266	✗	0	0	✓	1.622	60
Kamke 267	✓	0.039	36	✓	0.026	32
Kamke 268	✓	1.033	140	✓	0.079	124
Kamke 269	✗	0	0	✗	0	0
Kamke 270	✓	16.117	327	✓	0.024	402
Kamke 271	✓	1.536	370	✓	0.166	417
Kamke 272	✓	3.318	42	✓	0.142	43
Kamke 273	✓	0.833	297	✓	0.025	470
Kamke 274	✓	0.057	411	✓	0.031	810
Kamke 275	✓	0.47	18	✓	0.092	30
Kamke 276	✓	0.042	61	✓	0.065	45
Kamke 277	✓	0.015	53	✓	0.315	67
Kamke 278	✓	0.529	39	✓	0.06	33
Kamke 279	✓	11.438	107	✓	0.19	120
Kamke 280	✓	0.042	21	✓	0.055	24
Kamke 281	✓	0.075	75	✓	0.07	53
Kamke 282	✓	0.212	2129	✓	0.228	72
Kamke 283	✓	0.16	477	✓	0.069	622
Kamke 284	✓	0.127	59	✓	0.135	21
Kamke 285	✓	0.061	402	✓	0.159	431
Kamke 286	✓	0.43	3501	✓	1.698	1335
Kamke 287	✓	1.366	77	✓	0.079	56
Kamke 288	✓	0.027	534	✓	0.043	587
Kamke 289	✓	0.019	115	✓	0.035	115
Kamke 290	✓	0.093	831	✓	0.18	1666
Kamke 291	✓	0.694	39	✓	0.165	50
Kamke 292	✓	62.34	760	✓	0.049	124
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 293	✓	0.101	661	✓	0.321	36
Kamke 294	✓	0.055	71	✓	0.095	112
Kamke 295	✓	0.037	31	✓	0.202	29
Kamke 296	✓	0.621	102	✓	0.73	165
Kamke 297	✓	0.062	216	✓	0.296	29
Kamke 298	✓	0.01	72	✓	0.02	99
Kamke 299	✓	0.026	371	✓	0.167	327
Kamke 300	✓	0.077	99	✓	0.021	120
Kamke 301	✓	0.093	64	✓	0.188	25
Kamke 302	✓	0.023	70	✓	0.141	137
Kamke 303	✓	0.044	25	✓	0.178	34
Kamke 304	✓	45.279	59	✓	0.208	44
Kamke 305	✓	0.1	1277	✓	0.024	21
Kamke 306	✓	0.052	201	✓	0.353	381
Kamke 307	✓	0.027	149	✓	0.051	125
Kamke 308	✓	0.008	55	✓	0.016	37
Kamke 309	✓	0.015	151	✓	0.04	113
Kamke 310	✓	0.046	159	✓	0.203	125
Kamke 311	✓	0.174	2201	✓	0.184	50
Kamke 312	✓	0.251	204	✓	1.589	236
Kamke 313	✓	0.09	537	✓	0.218	912
Kamke 314	✓	0.045	188	✓	0.053	170
Kamke 315	✓	0.112	368	✓	0.09	447
Kamke 316	✓	0.064	48	✓	0.055	53
Kamke 317	✓	0.337	23	✓	0.128	29
Kamke 318	✓	0.151	4284	✓	0.025	28
Kamke 319	✓	0.025	302	✓	0.041	33
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 320	✓	0.059	76	✓	0.101	70
Kamke 321	✓	0.18	47	✓	0.175	42
Kamke 322	✓	0.21	2077	✓	0.032	28
Kamke 323	✓	0.046	463	✓	0.136	761
Kamke 324	✓	0.036	723	✓	0.142	770
Kamke 325	✓	0.052	139	✓	0.516	1192
Kamke 326	✓	5.423	13289	✓	0.457	160
Kamke 327	✓	0.397	669	✓	0.18	583
Kamke 328	✓	0.098	42	✓	0.193	33
Kamke 329	✓	0.326	102	✓	0.361	78
Kamke 330	✓	32.052	49	✓	0.031	22
Kamke 331	✗	0	0	✗	0	0
Kamke 332	✓	0.082	24	✓	0.016	31
Kamke 333	✓	0.169	72	✓	0.099	32
Kamke 334	✓	0.037	39	✓	0.028	19
Kamke 335	✓	0.178	75	✓	0.013	50
Kamke 336	✓	0.064	53	✓	0.036	41
Kamke 337	✓	0.059	52	✓	0.059	28
Kamke 338	✓	100.276	17681	✓	0.743	136
Kamke 339	✓	0.107	27	✓	0.19	27
Kamke 340	✗	0	0	✗	0	0
Kamke 341	✓	0.051	33	✓	0.059	30
Kamke 342	✓	0.26	163	✓	0.045	17
Kamke 343	✓	0.038	35	✓	0.052	27
Kamke 344	✓	0.02	23	✓	0.032	19
Kamke 345	✓	0.043	35	✓	0.066	36
Kamke 346	✓	0.059	24	✓	0.284	19
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 347	✓	0.125	32	✓	0.142	16
Kamke 348	✓	0.049	17	✓	0.104	15
Kamke 349	✓	0.041	15	✓	0.034	15
Kamke 350	✓	0.563	53	✓	1.076	270
Kamke 351	✓	0.368	61	✓	0.51	55
Kamke 352	✓	0.132	43	✓	0.288	35
Kamke 353	✓	0.02	14	✓	0.063	12
Kamke 354	✓	0.066	145	✓	0.047	115
Kamke 355	✓	0.048	17	✓	0.104	15
Kamke 356	✓	0.06	21	✓	0.126	19
Kamke 357	✓	0.306	35	✓	0.593	13
Kamke 358	✓	0.044	29	✓	0.075	11
Kamke 359	✓	0.058	45	✓	0.054	28
Kamke 360	✓	52.422	6218	✓	0.21	48
Kamke 361	✓	0.208	31	✓	0.26	22
Kamke 362	✓	0.069	23	✓	0.217	23
Kamke 363	✓	0.036	33	✓	0.07	35
Kamke 364	✓	0.064	31	✓	0.102	23
Kamke 365	✗	0	0	✓	0.293	42
Kamke 366	✓	202.389	88	✓	0.073	45
Kamke 367	✗	0	0	✗	0	0
Kamke 368	✗	0	0	✗	0	0
Kamke 369	✓	0.049	107	✓	0.706	68
Kamke 370	✗	0	0	✗	0	0
Kamke 371	✓	0.027	37	✓	0.665	20
Kamke 372	✓	0.005	27	✓	0.638	271
Kamke 373	✓	0.097	71	✓	0.267	47
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 374	✓	0.065	73	✓	0.651	85
Kamke 375	✓	0.044	71	✓	0.641	49
Kamke 376	✓	0.312	110	✓	1.165	215
Kamke 377	✓	0.005	19	✓	0.624	25
Kamke 378	✓	0.006	18	✓	0.608	32
Kamke 379	✓	0.005	18	✓	0.602	27
Kamke 380	✓	0.43	1757	✓	0.62	690
Kamke 381	✓	0.44	1757	✓	0.62	656
Kamke 382	✓	0.261	201	✓	0.633	146
Kamke 383	✗	0	0	✗	0	0
Kamke 384	✓	2.066	183	✓	0.026	50
Kamke 385	✗	0	0	✓	0.281	169
Kamke 386	✓	0.197	56	✓	0.416	27
Kamke 387	✓	0.522	134	✓	0.639	115
Kamke 388	✓	0.62	53	✓	0.08	217
Kamke 389	✓	0.045	57	✓	0.54	193
Kamke 390	✓	1.766	142	✓	0.258	416
Kamke 391	✓	0.006	29	✓	0.01	22
Kamke 392	✓	0.246	27	✓	0.458	50
Kamke 393	✓	0.031	31	✓	0.119	85
Kamke 394	✗	0	0	✓	5.835	310
Kamke 395	✗	0	0	✗	0	0
Kamke 396	✓	0.01	29	✓	0.013	20
Kamke 397	✓	0.432	143	✓	0.35	131
Kamke 398	✓	0.798	258	✓	2.427	138
Kamke 399	✓	0.005	20	✓	0.022	29
Kamke 400	✗	0	0	✓	0.195	117
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 401	✓	0.339	1093	✓	0.034	656
Kamke 402	✗	0	0	✓	0.184	117
Kamke 403	✓	0.301	116	✓	0.589	197
Kamke 404	✗	0	0	✓	0.26	499
Kamke 405	✓	0.969	53	✓	0.224	380
Kamke 406	✓	0.805	49	✓	0.081	266
Kamke 407	✓	0.018	51	✓	0.032	39
Kamke 408	✓	0.533	166	✓	0.058	73
Kamke 409	✓	30.776	66	✓	0.06	63
Kamke 410	✓	31.564	80	✓	0.062	64
Kamke 411	✓	0.552	181	✓	0.045	69
Kamke 412	✓	29.423	16145	✓	0.043	146
Kamke 413	✗	0	0	✓	0.197	337
Kamke 414	✗	0	0	✓	0.2	337
Kamke 415	✓	0.211	133	✓	0.193	95
Kamke 416	✗	0	0	✓	0.065	136
Kamke 417	✓	0.401	430	✓	0.037	33
Kamke 418	✓	0.441	165	✓	0.044	55
Kamke 419	✓	1.52	9073	✓	0.046	110
Kamke 420	✓	1.746	11757	✓	0.043	897
Kamke 421	✓	0.032	27	✓	0.039	31
Kamke 422	✓	0.047	49	✓	0.042	29
Kamke 423	✓	0.077	59	✓	0.047	52
Kamke 424	✓	0.385	223	✓	0.082	224
Kamke 425	✓	0.266	59	✓	0.045	59
Kamke 426	✓	0.389	310	✓	0.043	49
Kamke 427	✓	0.632	479	✓	0.046	67
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 428	✗	0	0	✓	0.073	85
Kamke 429	✗	0	0	✓	0.072	96
Kamke 430	✓	265.237	478	✓	1.112	9885
Kamke 431	✓	0.037	111	✓	0.161	62
Kamke 432	✓	1.713	64	✓	10.548	615
Kamke 433	✓	0.513	22	✓	0.234	32
Kamke 434	✓	0.033	27	✓	0.004	7
Kamke 435	✓	0.037	61	✓	0.245	22
Kamke 436	✓	0.035	26	✓	1.761	59
Kamke 437	✓	0.279	47	✓	0.052	36
Kamke 438	✓	0.007	21	✓	0.011	17
Kamke 439	✓	0.014	49	✓	0.056	33
Kamke 440	✓	0.007	19	✓	0.01	15
Kamke 441	✓	0.07	65	✓	1.138	121
Kamke 442	✓	0.009	28	✓	0.015	21
Kamke 443	✓	0.549	1921	✓	1.69	221
Kamke 444	✓	0.146	75	✓	0.833	121
Kamke 445	✓	0.01	49	✓	0.017	35
Kamke 446	✓	0.488	201	✓	0.058	57
Kamke 447	✓	0.016	41	✓	0.029	33
Kamke 448	✓	0.087	109	✓	3.785	166
Kamke 449	✓	0.01	27	✓	0.014	23
Kamke 450	✓	0.441	26	✓	0.456	51
Kamke 451	✗	0	0	✓	0.061	78
Kamke 452	✗	0	0	✓	1.718	37
Kamke 453	✓	0.586	395	✓	0.736	229
Kamke 454	✓	0.153	118	✓	0.129	138
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 455	✓	0.393	123	✓	0.188	66
Kamke 456	✓	0.122	79	✓	0.406	33
Kamke 457	✓	0.962	410	✓	0.74	135
Kamke 458	✓	0.06	139	✓	0.046	90
Kamke 459	✓	2.699	272	✓	0.635	65
Kamke 460	✗	0	0	✗	0	0
Kamke 461	✗	0	0	✗	0	0
Kamke 462	✓	0.016	43	✓	0.032	27
Kamke 463	✓	0.017	47	✓	0.082	50
Kamke 464	✓	0.061	52	✓	0.445	71
Kamke 465	✗	0	0	✓	0.073	209
Kamke 466	✓	0.251	145	✓	0.378	71
Kamke 467	✗	0	0	✓	0.07	148
Kamke 468	✗	0	0	✓	0.083	181
Kamke 469	✓	0.328	247	✓	0.099	242
Kamke 470	✗	0	0	✓	0.296	87
Kamke 471	✓	0.008	47	✓	0.017	33
Kamke 472	✓	0.186	127	✓	0.464	119
Kamke 473	✓	0.378	165	✓	0.591	78
Kamke 474	✓	0.226	135	✓	1.031	154
Kamke 475	✓	0.068	57	✓	0.452	69
Kamke 476	✗	0	0	✓	0.296	87
Kamke 477	✓	0.306	146	✓	0.513	929
Kamke 478	✓	0.167	141	✓	0.085	88
Kamke 479	✗	0	0	✓	0.307	929
Kamke 480	✗	0	0	✗	0	0
Kamke 481	✓	0.009	49	✓	0.02	35
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 482	✗	0	0	✗	0	0
Kamke 483	✓	0.161	71	✓	0.088	109
Kamke 484	✓	0.151	81	✓	0.086	121
Kamke 485	✗	0	0	✗	0	0
Kamke 486	✓	0.025	117	✓	0.102	59
Kamke 487	✗	0	0	✓	0.433	114
Kamke 488	✓	0.356	85	✓	0.438	113
Kamke 489	✗	0	0	✓	2.316	5525
Kamke 490	✓	0.587	70	✓	0.428	145
Kamke 491	✓	1.01	79	✓	0.724	251
Kamke 492	✓	0.271	111	✓	0.395	122
Kamke 493	✓	8.45	553	✓	1.115	124
Kamke 494	✗	0	0	✓	0.174	173
Kamke 495	✓	0.109	83	✓	0.418	61
Kamke 496	✓	95.098	65	✓	0.23	130
Kamke 497	✓	0.172	203	✓	0.447	203
Kamke 498	✓	0.1	107	✓	0.29	99
Kamke 499	✓	0.294	212	✓	0.191	201
Kamke 500	✓	1.273	100	✓	0.904	260
Kamke 501	✓	30.99	913	✓	4.878	287
Kamke 502	✓	1.707	100	✓	0.368	195
Kamke 503	✗	0	0	✗	0	0
Kamke 504	✗	0	0	✓	0.81	303
Kamke 505	✓	0.013	73	✓	0.033	52
Kamke 506	✗	0	0	✗	0	0
Kamke 507	✓	29.263	443	✗	0	0
Kamke 508	✗	0	0	✓	1.904	60

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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 509	✓	19.	817	✓	1.405	245
Kamke 510	✗	0	0	✗	0	0
Kamke 511	✓	1.56	229	✓	4.812	199
Kamke 512	✓	4.566	725	✓	18.492	135
Kamke 513	✗	0	0	✓	2.542	2402
Kamke 514	✓	14.791	605	✓	0.235	87
Kamke 515	✗	0	0	✓	2.196	113
Kamke 516	✓	2.851	251	✓	1.09	70
Kamke 517	✓	2.989	281	✓	1.092	78
Kamke 518	✓	0.77	236	✓	0.198	126
Kamke 519	✓	1.757	473	✓	0.37	197
Kamke 520	✓	219.247	3323	✓	0.098	245
Kamke 521	✓	0.004	14	✓	0.033	33
Kamke 522	✓	0.004	20	✓	0.047	46
Kamke 523	✗	0	0	✓	0.056	299
Kamke 524	✗	0	0	✓	0.06	295
Kamke 525	✓	0.063	135	✓	0.066	125
Kamke 526	✓	0.012	45	✓	0.016	32
Kamke 527	✗	0	0	✓	1.042	43
Kamke 528	✗	0	0	✓	0.109	95
Kamke 529	✓	53.844	1758	✓	0.07	1473
Kamke 530	✗	0	0	✓	0.174	421
Kamke 531	✗	0	0	✗	0	0
Kamke 532	✗	0	0	✓	0.161	1208
Kamke 533	✗	0	0	✓	0.036	92
Kamke 534	✗	0	0	✓	0.066	102
Kamke 535	✗	0	0	✓	0.052	80
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 536	✓	0.025	86	✓	0.041	52
Kamke 537	✗	0	0	✓	5.589	209
Kamke 538	✗	0	0	✓	0.934	3181
Kamke 539	✓	0.028	45	✓	0.375	32
Kamke 540	✓	0.021	69	✓	0.218	109
Kamke 541	✗	0	0	✓	0.77	103
Kamke 542	✗	0	0	✓	0.744	107
Kamke 543	✗	0	0	✓	1.629	325
Kamke 544	✗	0	0	✓	1.141	7860
Kamke 545	✓	0.717	383	✓	0.345	141
Kamke 546	✗	0	0	✓	0.31	245
Kamke 547	✓	1.291	490	✓	0.396	118
Kamke 548	✓	1.002	569	✓	0.477	241
Kamke 549	✓	0.249	406	✓	0.354	552
Kamke 550	✗	0	0	✓	0.291	61
Kamke 551	✓	0.469	84	✓	0.4	127
Kamke 552	✓	0.309	39	✓	0.08	43
Kamke 553	✓	0.122	51	✓	0.05	36
Kamke 554	✓	0.075	49	✓	0.359	29
Kamke 555	✗	0	0	✓	0.361	15
Kamke 556	✓	6.326	60	✓	0.519	581
Kamke 557	✓	0.018	39	✓	0.448	78
Kamke 558	✓	0.594	395	✓	0.49	223
Kamke 559	✓	0.308	212	✓	0.626	223
Kamke 560	✓	21.008	110	✓	1.295	1512
Kamke 561	✗	0	0	✓	2.34	50
Kamke 562	✗	0	0	✓	0.476	3961
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 563	✓	0.103	59	✓	0.138	66
Kamke 564	✓	0.043	28	✓	0.024	36
Kamke 565	✓	0.012	25	✓	0.122	17
Kamke 566	✗	0	0	✓	0.032	16
Kamke 567	✗	0	0	✓	0.029	18
Kamke 568	✓	0.037	28	✓	0.06	32
Kamke 569	✓	0.041	59	✓	0.524	147
Kamke 570	✗	0	0	✓	0.056	30
Kamke 571	✓	0.106	114	✓	0.264	199
Kamke 572	✗	0	0	✗	0	0
Kamke 573	✓	0.02	42	✓	0.16	16
Kamke 574	✓	0.016	102	✓	0.154	67
Kamke 575	✗	0	0	✗	0	0
Kamke 576	✗	0	0	✗	0	0
Kamke 577	✓	12.087	240	✓	0.032	28
Kamke 578	✓	16.322	97	✓	0.04	22
Kamke 579	✓	13.032	510	✓	0.047	35
Kamke 580	✓	24.823	200	✓	0.062	31
Kamke 581	✓	38.915	141	✓	0.104	32
Kamke 582	✓	16.653	139	✓	0.237	30
Kamke 583	✓	41.053	123	✓	0.145	31
Kamke 584	✓	18.966	112	✓	0.067	35
Kamke 585	✓	122.928	202	✓	0.47	168
Kamke 586	✓	157.	972	✓	0.276	39
Kamke 587	✓	251.729	120	✓	0.144	29
Kamke 588	✓	30.291	110	✓	0.13	53
Kamke 589	✓	19.209	242	✓	0.155	38
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 590	✓	30.411	91	✓	0.15	28
Kamke 591	✓	18.649	250	✓	0.197	108
Kamke 592	✗	0	0	✓	0.206	33
Kamke 593	✓	36.75	218	✓	0.365	35
Kamke 594	✓	18.058	233	✓	0.151	67
Kamke 595	✓	18.836	201	✓	0.143	72
Kamke 596	✓	227.775	153	✓	0.103	26
Kamke 597	✓	24.271	127	✓	0.418	37
Kamke 598	✓	0.073	36	✓	0.027	29
Kamke 599	✓	21.305	92	✓	0.106	57
Kamke 600	✓	22.294	243	✓	0.151	38
Kamke 601	✓	31.425	187	✓	0.145	61
Kamke 602	✓	224.98	164	✓	0.144	33
Kamke 603	✓	16.372	114	✓	0.151	27
Kamke 604	✓	22.303	140	✓	0.166	30
Kamke 605	✓	206.753	142	✓	0.139	29
Kamke 606	✓	61.616	358	✓	0.959	34
Kamke 607	✗	0	0	✓	0.103	22
Kamke 608	✓	298.623	271	✓	0.153	40
Kamke 609	✓	48.978	114	✓	0.163	22
Kamke 610	✓	0.059	24	✓	0.015	20
Kamke 611	✓	38.027	188	✓	0.095	28
Kamke 612	✓	46.05	196	✓	0.152	27
Kamke 613	✗	0	0	✓	0.112	23
Kamke 614	✓	68.136	174	✓	0.449	59
Kamke 615	✓	15.608	74	✓	0.139	26
Kamke 616	✓	45.515	174	✓	0.1	26
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 617	✓	258.618	612	✓	0.306	47
Kamke 618	✓	0.115	25	✓	0.358	34
Kamke 619	✓	248.478	327	✓	0.487	81
Kamke 620	✗	0	0	✓	0.195	37
Kamke 621	✓	0.085	445	✓	0.264	59
Kamke 622	✓	0.385	134	✓	0.209	83
Kamke 623	✓	0.154	77	✓	0.199	51
Kamke 624	✓	48.905	9837	✓	1.188	46
Kamke 625	✓	0.196	76	✓	0.227	55
Kamke 626	✓	0.18	104	✓	0.31	112
Kamke 627	✓	0.755	25	✓	0.202	39
Kamke 628	✓	0.079	33	✓	0.177	23
Kamke 629	✓	0.7	47	✓	0.201	72
Kamke 630	✓	0.522	101	✓	0.296	98
Kamke 631	✓	0.086	31	✓	0.173	23
Kamke 632	✓	0.148	65	✓	0.221	52
Kamke 633	✓	0.182	85	✓	0.864	52
Kamke 634	✓	0.171	33	✓	0.204	26
Kamke 635	✓	0.113	33	✓	0.163	22
Kamke 636	✓	0.051	24	✓	0.168	19
Kamke 637	✓	16.207	59	✓	1.829	84
Kamke 638	✗	0	0	✓	0.152	35
Kamke 639	✗	0	0	✓	0.204	48
Kamke 640	✗	0	0	✓	0.24	45
Kamke 641	✓	0.162	35	✓	0.192	26
Kamke 642	✓	0.127	105	✓	0.239	286
Kamke 643	✓	0.109	31	✓	0.168	22
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 644	✓	0.259	34	✓	0.325	27
Kamke 645	✓	0.035	20	✓	0.087	14
Kamke 646	✓	0.166	35	✓	0.227	23
Kamke 647	✓	0.379	115	✓	0.304	460
Kamke 648	✓	0.32	128	✓	0.578	41
Kamke 649	✓	0.163	37	✓	0.188	27
Kamke 650	✓	0.225	40	✓	0.209	28
Kamke 651	✓	0.032	16	✓	0.065	13
Kamke 652	✓	1.802	101	✓	0.184	27
Kamke 653	✓	0.167	34	✓	0.169	24
Kamke 654	✓	0.15	37	✓	0.219	23
Kamke 655	✓	20.467	82	✓	0.669	64
Kamke 656	✓	0.038	20	✓	0.071	15
Kamke 657	✓	0.171	37	✓	0.184	26
Kamke 658	✓	0.223	45	✓	0.27	28
Kamke 659	✓	0.402	60	✓	0.21	41
Kamke 660	✓	0.242	42	✓	0.205	29
Kamke 661	✓	0.383	61	✓	0.194	39
Kamke 662	✓	0.175	37	✓	0.194	26
Kamke 663	✓	2.127	101	✓	0.174	27
Kamke 664	✓	0.175	36	✓	0.161	25
Kamke 665	✓	0.247	41	✓	0.431	28
Kamke 666	✓	0.066	29	✓	0.167	24
Kamke 667	✓	0.935	90	✓	0.209	83
Kamke 668	✓	0.505	78	✓	0.693	58
Kamke 669	✓	0.78	264	✓	0.204	72
Kamke 670	✓	0.337	99	✓	0.351	70
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 671	✓	0.368	192	✓	0.2	231
Kamke 672	✗	0	0	✓	0.202	36
Kamke 673	✓	0.075	23	✓	0.48	17
Kamke 674	✓	0.215	40	✓	0.26	27
Kamke 675	✓	0.05	48	✓	0.047	46
Kamke 676	✓	0.291	144	✓	0.474	43
Kamke 677	✓	0.032	80	✓	0.041	64
Kamke 678	✓	0.226	101	✓	0.281	37
Kamke 679	✓	0.03	59	✓	0.042	37
Kamke 680	✓	0.212	39	✓	0.271	28
Kamke 681	✓	0.04	84	✓	0.051	57
Kamke 682	✓	0.08	39	✓	0.294	28
Kamke 683	✓	0.342	84	✓	0.13	166
Kamke 684	✓	0.024	20	✓	2.541	30
Kamke 685	✓	0.033	87	✓	0.055	48
Kamke 686	✓	15.863	68	✓	1.797	85
Kamke 687	✓	0.058	130	✓	0.072	39
Kamke 688	✓	0.103	78	✓	0.062	61
Kamke 689	✓	0.066	60	✓	0.044	25
Kamke 690	✓	0.286	127	✓	0.317	40
Kamke 691	✓	0.068	21	✓	0.735	17
Kamke 692	✓	0.024	20	✓	2.132	30
Kamke 693	✓	0.162	146	✓	0.105	40
Kamke 694	✓	0.267	66	✓	0.281	30
Kamke 695	✓	0.052	34	✓	0.041	39
Kamke 696	✗	0	0	✓	0.053	32
Kamke 697	✓	0.117	114	✓	0.107	40
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 698	✓	0.129	108	✓	0.087	34
Kamke 699	✓	0.222	101	✓	0.277	36
Kamke 700	✓	0.062	76	✓	0.111	62
Kamke 701	✗	0	0	✓	6.028	100
Kamke 702	✗	0	0	✓	0.088	35
Kamke 703	✗	0	0	✓	0.236	68
Kamke 704	✗	0	0	✓	0.052	45
Kamke 705	✓	0.053	30	✓	0.17	24
Kamke 706	✗	0	0	✓	0.484	65
Kamke 707	✗	0	0	✓	0.556	105
Kamke 708	✓	0.276	89	✓	0.946	308
Kamke 709	✓	4.215	217	✓	0.285	39
Kamke 710	✗	0	0	✓	2.583	35
Kamke 711	✓	0.065	28	✓	0.135	31
Kamke 712	✓	0.259	115	✓	0.326	38
Kamke 713	✓	0.119	649	✓	48.503	86
Kamke 714	✗	0	0	✓	0.672	99
Kamke 715	✓	0.243	104	✓	0.284	39
Kamke 716	✓	4.096	133	✓	0.351	37
Kamke 717	✓	0.306	46	✓	0.35	33
Kamke 718	✓	0.119	127	✓	0.067	44
Kamke 719	✓	0.089	49	✓	0.168	57
Kamke 720	✓	4.365	314	✓	0.242	48
Kamke 721	✓	0.018	27	✓	0.082	19
Kamke 722	✓	47.408	493	✓	0.295	96
Kamke 723	✓	0.066	663	✓	0.074	864
Kamke 724	✓	55.892	422	✓	0.057	20
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 725	✓	0.242	19	✓	0.83	25
Kamke 726	✓	0.085	625	✓	0.294	83
Kamke 727	✓	0.413	29	✓	0.277	25
Kamke 728	✓	0.358	72	✓	0.285	50
Kamke 729	✓	0.301	327	✓	0.112	497
Kamke 730	✗	0	0	✓	1.975	49
Kamke 731	✓	0.182	47	✓	0.179	42
Kamke 732	✓	0.456	110	✓	0.366	43
Kamke 733	✗	0	0	✗	0	0
Kamke 734	✓	0.105	37	✓	0.163	39
Kamke 735	✗	0	0	✓	0.079	104
Kamke 736	✓	0.096	31	✓	0.248	47
Kamke 737	✓	0.029	36	✓	0.105	29
Kamke 738	✓	0.504	1347	✓	0.885	1096
Kamke 739	✓	0.121	39	✓	0.192	35
Kamke 740	✓	0.061	74	✓	0.107	72
Kamke 741	✓	2.891	175	✓	1.093	400
Kamke 742	✓	4.239	3913	✓	1.855	261
Kamke 743	✗	0	0	✓	0.461	301
Kamke 744	✓	0.045	510	✓	0.201	621
Kamke 745	✗	0	0	✓	0.069	104
Kamke 746	✗	0	0	✓	0.408	243
Kamke 747	✗	0	0	✓	0.25	69
Kamke 748	✓	0.302	285	✓	0.106	497
Kamke 749	✓	0.105	126	✓	0.131	192
Kamke 750	✓	0.328	72	✓	0.258	49
Kamke 751	✓	0.071	30	✓	0.106	26
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 752	✗	0	0	✓	1.672	879
Kamke 753	✓	0.099	41	✓	0.152	38
Kamke 754	✓	0.024	47	✓	0.018	26
Kamke 755	✓	0.183	2633	✓	0.138	44
Kamke 756	✓	0.074	95	✓	0.032	37
Kamke 757	✓	0.026	36	✓	0.068	26
Kamke 758	✓	0.93	459	✓	0.244	41
Kamke 759	✗	0	0	✓	0.645	315
Kamke 760	✓	1.22	112	✓	2.267	475
Kamke 761	✓	0.024	33	✓	0.056	18
Kamke 762	✓	0.055	26	✓	0.112	22
Kamke 763	✓	0.056	22	✓	0.113	14
Kamke 764	✓	0.092	50	✓	0.121	36
Kamke 765	✗	0	0	✓	0.196	106
Kamke 766	✗	0	0	✓	0.239	85
Kamke 767	✓	0.026	38	✓	0.061	26
Kamke 768	✓	0.978	66	✓	0.081	26
Kamke 769	✗	0	0	✓	0.483	251
Kamke 770	✓	0.126	705	✓	0.132	1345
Kamke 771	✓	0.033	46	✓	0.098	84
Kamke 772	✓	0.064	21	✓	0.112	18
Kamke 773	✓	0.048	61	✓	0.207	48
Kamke 774	✓	0.03	45	✓	0.086	50
Kamke 775	✓	0.1	943	✓	0.085	60
Kamke 776	✗	0	0	✓	0.873	92
Kamke 777	✓	0.104	39	✓	0.138	51
Kamke 778	✓	0.074	95	✓	0.026	37
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 779	✓	0.033	57	✓	0.095	50
Kamke 780	✓	0.026	15	✓	0.379	27
Kamke 781	✓	0.538	82	✓	0.247	61
Kamke 782	✗	0	0	✓	0.51	92
Kamke 783	✗	0	0	✓	0.191	69
Kamke 784	✗	0	0	✓	31.79	24
Kamke 785	✗	0	0	✓	101.522	24
Kamke 786	✗	0	0	✓	0.067	39
Kamke 787	✓	27.223	484	✓	0.335	191
Kamke 788	✗	0	0	✓	0.512	106
Kamke 789	✗	0	0	✗	0	0
Kamke 790	✗	0	0	✗	0	0
Kamke 791	✗	0	0	✓	18.086	634
Kamke 792	✗	0	0	✓	0.613	114
Kamke 793	✓	14.501	399	✓	0.1	32
Kamke 794	✓	0.088	67	✓	0.539	32
Kamke 795	✓	0.169	111	✓	0.031	37
Kamke 796	✓	16.714	102	✓	1.272	143
Kamke 797	✓	2.095	349	✓	0.334	281
Kamke 798	✓	0.609	27	✓	0.143	30
Kamke 799	✓	0.309	70	✓	0.382	147
Kamke 800	✓	0.19	128	✓	0.025	41
Kamke 801	✓	0.11	126	✓	0.065	63
Kamke 802	✓	0.081	98	✓	0.118	27
Kamke 803	✓	0.088	634	✓	0.431	65
Kamke 804	✓	0.498	43	✓	1.288	38
Kamke 805	✓	0.036	37	✓	0.603	42
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 806	✓	0.279	23	✓	0.709	22
Kamke 807	✗	0	0	✓	0.717	43
Kamke 808	✓	1.362	149	✓	0.101	44
Kamke 809	✓	0.179	128	✓	0.023	41
Kamke 810	✓	0.017	40	✓	0.054	16
Kamke 811	✓	2.278	33	✓	2.292	32
Kamke 812	✓	0.329	70	✓	0.428	32
Kamke 813	✓	0.492	66	✓	0.452	38
Kamke 814	✓	0.018	72	✓	0.039	38
Kamke 815	✓	17.776	103	✓	1.001	202
Kamke 816	✓	0.149	74	✓	0.901	307
Kamke 817	✓	0.377	63	✓	0.786	27
Kamke 818	✓	0.05	34	✓	0.142	34
Kamke 819	✓	0.231	65	✓	0.385	32
Kamke 820	✓	0.335	63	✓	0.772	27
Kamke 821	✓	0.161	2093	✓	0.161	27
Kamke 822	✓	0.042	32	✓	0.128	25
Kamke 823	✓	0.404	39	✓	0.136	38
Kamke 824	✓	0.056	68	✓	0.404	61
Kamke 825	✓	0.207	148	✓	0.107	89
Kamke 826	✓	0.621	70	✓	0.324	51
Kamke 827	✓	0.126	111	✓	0.221	49
Kamke 828	✓	0.21	56	✓	0.287	54
Kamke 829	✓	0.383	74	✓	0.434	40
Kamke 830	✓	0.469	37	✓	0.133	38
Kamke 831	✓	4.441	145	✓	0.343	35
Kamke 832	✓	3.35	2497	✓	0.194	31
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 833	✓	0.12	105	✓	0.17	49
Kamke 834	✓	0.778	90	✓	0.322	60
Kamke 835	✗	0	0	✗	0	0
Kamke 836	✓	12.573	379	✓	0.208	102
Kamke 837	✗	0	0	✗	0	0
Kamke 838	✓	0.03	31	✓	0.104	27
Kamke 839	✓	0.075	28	✓	0.08	19
Kamke 840	✓	0.089	30	✓	0.073	19
Kamke 841	✓	1.364	236	✓	0.319	97
Kamke 842	✓	0.122	186	✓	0.028	43
Kamke 843	✓	0.126	198	✓	0.025	43
Kamke 844	✓	15.473	386	✓	0.18	97
Kamke 845	✓	5.274	227	✓	0.262	44
Kamke 846	✓	1.45	362	✓	0.191	40
Kamke 847	✓	0.365	69	✓	0.398	36
Kamke 848	✓	0.114	154	✓	0.637	27
Kamke 849	✓	0.328	68	✓	0.381	35
Kamke 850	✓	0.203	1478	✓	1.202	32
Kamke 851	✓	0.171	145	✓	0.068	42
Kamke 852	✓	0.16	145	✓	0.068	42
Kamke 853	✓	0.02	76	✓	0.039	65
Kamke 854	✗	0	0	✓	0.213	51
Kamke 855	✗	0	0	✓	0.213	51
Kamke 856	✓	0.937	100	✓	0.296	65
Kamke 857	✓	0.341	69	✓	0.392	36
Kamke 858	✓	0.168	145	✓	0.075	42
Kamke 859	✓	1.341	102	✓	0.293	63
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 860	✓	0.151	33	✓	2.401	29
Kamke 861	✓	1.865	155	✓	0.178	26
Kamke 862	✗	0	0	✓	0.235	27
Kamke 863	✓	0.036	30	✓	4.705	38
Kamke 864	✓	0.044	137	✓	0.092	186
Kamke 865	✗	0	0	✓	0.223	23
Kamke 866	✓	0.482	74	✓	0.668	39
Kamke 867	✓	0.065	77	✓	0.067	30
Kamke 868	✓	0.048	79	✓	0.065	28
Kamke 869	✓	0.037	42	✓	0.076	37
Kamke 870	✓	1.657	35	✓	1.09	30
Kamke 871	✓	0.024	22	✓	0.082	66
Kamke 872	✓	0.047	215	✓	0.066	49
Kamke 873	✓	0.344	53	✓	0.262	50
Kamke 874	✓	0.073	101	✓	0.046	40
Kamke 875	✓	0.291	285	✓	0.263	79
Kamke 876	✓	0.02	135	✓	0.048	41
Kamke 877	✓	0.018	49	✓	0.049	71
Kamke 878	✓	0.269	130	✓	0.483	75
Kamke 879	✓	0.149	135	✓	0.233	55
Kamke 880	✓	0.138	131	✓	0.075	41
Kamke 881	✓	0.018	75	✓	0.051	75
Kamke 882	✓	0.076	119	✓	0.06	41
Kamke 883	✓	1.431	164	✓	0.811	595
Kamke 884	✓	0.363	71	✓	0.345	107
Kamke 885	✗	0	0	✗	0	0
Kamke 886	✓	0.058	82	✓	0.036	42
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 887	✓	0.026	106	✓	0.052	70
Kamke 888	✓	0.02	78	✓	0.057	79
Kamke 889	✗	0	0	✓	1.276	47
Kamke 890	✓	0.144	103	✓	0.994	34
Kamke 891	✓	0.026	135	✓	0.064	56
Kamke 892	✗	0	0	✓	0.517	40
Kamke 893	✓	0.066	80	✓	0.03	41
Kamke 894	✗	0	0	✗	0	0
Kamke 895	✓	0.027	81	✓	0.059	80
Kamke 896	✓	0.227	106	✓	0.392	63
Kamke 897	✓	0.028	79	✓	0.077	85
Kamke 898	✓	0.025	106	✓	0.051	83
Kamke 899	✓	0.07	106	✓	0.035	47
Kamke 900	✓	0.097	381	✓	0.074	46
Kamke 901	✓	0.093	33	✓	0.504	30
Kamke 902	✓	0.102	295	✓	0.263	175
Kamke 903	✓	0.052	19	✓	0.075	48
Kamke 904	✓	0.053	23	✓	0.048	64
Kamke 905	✓	0.064	85	✓	0.044	46
Kamke 906	✓	0.058	326	✓	0.36	33
Kamke 907	✓	0.053	22	✓	0.162	22
Kamke 908	✓	1.551	1278	✓	0.436	1742
Kamke 909	✗	0	0	✓	0.578	84
Kamke 910	✓	0.061	98	✓	0.034	42
Kamke 911	✓	4.28	56	✓	0.582	30
Kamke 912	✓	1.569	205	✓	4.497	43
Kamke 913	✗	0	0	✓	0.059	43
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 914	✓	1.666	401	✓	3.231	77
Kamke 915	✗	0	0	✓	0.061	43
Kamke 916	✗	0	0	✓	0.309	80
Kamke 917	✗	0	0	✓	0.221	38
Kamke 918	✗	0	0	✓	1.309	41
Kamke 919	✗	0	0	✓	0.181	120
Kamke 920	✓	0.248	301	✗	0	0
Kamke 921	✓	2.617	52	✓	0.149	30
Kamke 922	✗	0	0	✓	0.142	47
Kamke 923	✗	0	0	✓	0.219	36
Kamke 924	✓	0.949	55	✓	0.142	47
Kamke 925	✗	0	0	✓	0.243	38
Kamke 926	✓	0.027	128	✓	0.061	65
Kamke 927	✓	0.123	112	✓	0.131	72
Kamke 928	✓	1.437	23	✓	0.421	21
Kamke 929	✗	0	0	✓	0.043	42
Kamke 930	✓	1.697	39	✓	0.651	36
Kamke 931	✓	0.025	80	✓	0.045	73
Kamke 932	✗	0	0	✓	0.152	54
Kamke 933	✓	0.082	99	✓	0.041	39
Kamke 934	✓	0.111	102	✓	0.073	39
Kamke 935	✓	10.23	248	✓	0.199	55
Kamke 936	✓	0.103	99	✓	0.085	39
Kamke 937	✓	0.028	124	✓	0.065	79
Kamke 938	✓	0.069	108	✓	0.035	39
Kamke 939	✓	0.41	136	✓	0.201	70
Kamke 940	✓	0.022	80	✓	0.055	63
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 941	✓	0.378	53	✓	0.053	35
Kamke 942	✗	0	0	✓	0.561	43
Kamke 943	✓	0.423	53	✓	0.053	40
Kamke 944	✓	1.85	233	✓	0.08	47
Kamke 945	✓	1.405	213	✓	0.065	41
Kamke 946	✓	0.084	150	✓	0.166	100
Kamke 947	✓	0.109	30	✓	0.279	36
Kamke 948	✓	0.263	39	✓	0.194	68
Kamke 949	✓	0.023	76	✓	0.047	97
Kamke 950	✓	0.177	141	✓	0.1	42
Kamke 951	✓	0.155	140	✓	0.081	41
Kamke 952	✓	0.141	189	✓	0.317	65
Kamke 953	✗	0	0	✓	0.441	145
Kamke 954	✓	0.096	115	✓	0.098	53
Kamke 955	✓	0.042	112	✓	0.112	111
Kamke 956	✓	0.214	28	✓	0.074	197
Kamke 957	✓	0.204	28	✓	0.054	197
Kamke 958	✓	0.064	82	✓	0.049	40
Kamke 959	✓	0.046	20	✓	0.063	16
Kamke 960	✓	0.036	14	✓	0.049	16
Kamke 961	✗	0	0	✓	0.392	45
Kamke 962	✓	5.883	1191	✓	1.894	79
Kamke 963	✓	0.125	108	✓	0.253	39
Kamke 964	✓	5.238	264	✓	3.126	80
Kamke 965	✓	0.058	29	✓	0.113	25
Kamke 966	✓	0.446	292	✓	0.914	50
Kamke 967	✓	0.136	151	✓	0.089	90
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 968	✓	0.083	30	✓	0.148	45
Kamke 969	✓	0.058	19	✓	0.141	27
Kamke 970	✓	0.492	66	✓	0.899	183
Kamke 971	✓	0.105	157	✓	0.249	88
Kamke 972	✓	0.026	32	✓	0.069	27
Kamke 973	✓	0.173	146	✓	0.338	135
Kamke 974	✓	0.011	39	✓	0.038	57
Kamke 975	✓	0.012	47	✓	0.041	59
Kamke 976	✓	0.08	101	✓	0.237	57
Kamke 977	✓	0.198	139	✓	0.209	122
Kamke 978	✓	0.048	60	✓	0.169	71
Kamke 979	✓	0.012	37	✓	0.052	57
Kamke 980	✓	0.013	43	✓	0.018	35
Kamke 981	✓	0.017	49	✓	0.025	41
Kamke 982	✓	0.107	132	✓	0.431	187
Kamke 983	✓	0.254	238	✓	0.278	469
Kamke 984	✓	3.044	428	✓	0.281	40
Kamke 985	✓	0.223	103	✓	0.042	43
Kamke 986	✓	0.016	44	✓	0.028	36
Kamke 987	✓	0.096	40	✓	0.045	26
Kamke 988	✓	0.29	104	✓	0.037	29
Kamke 989	✓	0.103	55	✓	0.039	35
Kamke 990	✓	0.461	49	✓	0.505	46
Kamke 991	✓	0.252	101	✓	0.032	29
Kamke 992	✓	0.108	42	✓	0.035	25
Kamke 993	✗	0	0	✓	0.022	35
Kamke 994	✓	0.121	198	✓	0.022	43
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 995	✓	0.017	17	✓	0.139	14
Kamke 996	✗	0	0	✓	0.074	15
Kamke 997	✓	0.03	18	✓	0.065	16
Kamke 998	✓	0.433	27	✓	0.396	27
Kamke 999	✓	0.025	24	✓	0.061	39
Kamke 1000	✗	0	0	✓	0.16	19
Kamke 1001	✓	0.005	12	✓	0.002	9
Kamke 1002	✓	0.005	16	✓	0.005	13
Kamke 1003	✓	0.111	45	✓	0.046	26
Kamke 1004	✓	0.099	47	✓	0.045	27
Kamke 1005	✓	0.519	1163	✓	0.105	82
Kamke 1006	✓	0.005	20	✓	0.007	15
Kamke 1007	✓	0.06	135	✓	0.015	26
Kamke 1008	✓	0.041	48	✓	0.043	43
Kamke 1009	✓	0.005	28	✓	0.014	21
Kamke 1010	✓	0.007	46	✓	0.032	31
Kamke 1011	✓	0.008	33	✓	0.035	23
Kamke 1012	✓	0.009	47	✓	0.09	31
Kamke 1013	✓	0.02	43	✓	0.037	29
Kamke 1014	✓	0.037	170	✓	0.102	65
Kamke 1015	✗	0	0	✗	0	0
Kamke 1016	✓	0.135	312	✓	0.214	95
Kamke 1017	✓	0.027	46	✓	0.043	17
Kamke 1018	✓	0.023	55	✓	0.046	39
Kamke 1019	✗	0	0	✗	0	0
Kamke 1020	✓	0.654	180	✓	0.202	61
Kamke 1021	✓	0.046	44	✓	0.217	39
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1022	✓	0.027	28	✓	0.209	21
Kamke 1023	✓	0.015	44	✓	0.212	29
Kamke 1024	✓	0.158	84	✓	0.137	34
Kamke 1025	✓	0.948	615	✓	0.205	105
Kamke 1026	✗	0	0	✗	0	0
Kamke 1027	✗	0	0	✓	0.408	69
Kamke 1028	✗	0	0	✗	0	0
Kamke 1029	✗	0	0	✓	0.134	22
Kamke 1030	✗	0	0	✗	0	0
Kamke 1031	✗	0	0	✗	0	0
Kamke 1032	✗	0	0	✓	0.118	53
Kamke 1033	✓	0.017	37	✓	0.009	27
Kamke 1034	✓	0.012	20	✓	0.007	15
Kamke 1035	✓	0.006	58	✓	0.012	45
Kamke 1036	✓	0.457	207	✓	0.097	128
Kamke 1037	✓	0.03	101	✓	0.099	73
Kamke 1038	✗	0	0	✗	0	0
Kamke 1039	✓	0.013	47	✓	0.006	33
Kamke 1040	✓	0.03	53	✓	0.04	35
Kamke 1041	✓	0.01	55	✓	0.071	47
Kamke 1042	✓	0.009	61	✓	0.065	47
Kamke 1043	✓	0.045	69	✓	0.195	44
Kamke 1044	✓	0.01	39	✓	0.069	35
Kamke 1045	✓	0.022	39	✓	0.009	28
Kamke 1046	✓	0.008	31	✓	0.072	31
Kamke 1047	✓	0.015	27	✓	0.032	22
Kamke 1048	✓	0.012	45	✓	0.071	43
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1049	✓	0.06	109	✓	0.157	70
Kamke 1050	✓	0.013	23	✓	0.027	18
Kamke 1051	✓	0.027	44	✓	0.038	27
Kamke 1052	✓	0.022	78	✓	0.095	65
Kamke 1053	✓	0.03	57	✓	0.045	35
Kamke 1054	✓	0.049	172	✓	0.053	105
Kamke 1055	✓	0.156	421	✓	0.237	317
Kamke 1056	✓	0.038	66	✓	0.104	48
Kamke 1057	✓	0.866	55	✓	0.254	50
Kamke 1058	✓	0.857	55	✓	0.13	35
Kamke 1059	✓	0.056	72	✓	0.081	55
Kamke 1060	✓	0.037	83	✓	0.181	91
Kamke 1061	✓	0.076	70	✓	0.08	38
Kamke 1062	✓	0.03	35	✓	0.026	23
Kamke 1063	✓	0.043	28	✓	0.217	66
Kamke 1064	✓	0.572	1400	✓	0.3	129
Kamke 1065	✓	0.167	114	✓	0.243	67
Kamke 1066	✓	0.034	18	✓	0.072	15
Kamke 1067	✓	0.034	21	✓	0.047	17
Kamke 1068	✓	0.14	20	✓	0.234	45
Kamke 1069	✓	0.037	19	✓	0.093	15
Kamke 1070	✓	0.312	143	✓	0.189	67
Kamke 1071	✓	0.104	59	✓	0.053	37
Kamke 1072	✗	0	0	✗	0	0
Kamke 1073	✗	0	0	✗	0	0
Kamke 1074	✗	0	0	✓	0.03	21
Kamke 1075	✗	0	0	✗	0	0
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1076	✗	0	0	✗	0	0
Kamke 1077	✗	0	0	✗	0	0
Kamke 1078	✓	0.07	73	✓	0.03	39
Kamke 1079	✓	0.237	135	✓	0.02	37
Kamke 1080	✗	0	0	✓	0.33	74
Kamke 1081	✗	0	0	✗	0	0
Kamke 1082	✗	0	0	✓	0.152	85
Kamke 1083	✗	0	0	✓	0.098	43
Kamke 1084	✗	0	0	✓	0.086	21
Kamke 1085	✗	0	0	✓	0.08	29
Kamke 1086	✓	0.006	42	✓	0.027	29
Kamke 1087	✓	0.01	36	✓	0.079	35
Kamke 1088	✓	0.104	180	✓	0.136	36
Kamke 1089	✓	0.046	99	✓	0.054	61
Kamke 1090	✓	0.034	50	✓	0.048	59
Kamke 1091	✓	0.028	41	✓	0.032	35
Kamke 1092	✓	0.097	72	✓	0.054	29
Kamke 1093	✓	0.006	13	✓	0.006	10
Kamke 1094	✓	0.025	41	✓	0.01	29
Kamke 1095	✓	0.01	30	✓	0.034	23
Kamke 1096	✓	0.016	61	✓	0.067	43
Kamke 1097	✓	0.028	46	✓	0.008	31
Kamke 1098	✓	0.011	41	✓	0.009	27
Kamke 1099	✗	0	0	✓	0.041	25
Kamke 1100	✓	0.023	44	✓	0.038	23
Kamke 1101	✓	0.028	51	✓	0.032	31
Kamke 1102	✓	0.008	42	✓	0.033	35
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1103	✓	0.028	64	✓	0.01	35
Kamke 1104	✓	0.037	104	✓	0.013	47
Kamke 1105	✓	0.022	64	✓	0.042	45
Kamke 1106	✓	0.053	441	✓	0.094	77
Kamke 1107	✓	0.031	40	✓	0.079	33
Kamke 1108	✓	0.036	37	✓	0.079	29
Kamke 1109	✓	0.053	45	✓	0.03	40
Kamke 1110	✓	0.042	36	✓	0.048	23
Kamke 1111	✓	0.02	20	✓	0.026	14
Kamke 1112	✓	0.026	30	✓	0.035	22
Kamke 1113	✓	0.023	24	✓	0.063	17
Kamke 1114	✓	0.042	39	✓	0.047	35
Kamke 1115	✓	0.063	76	✓	0.099	55
Kamke 1116	✓	0.053	43	✓	0.087	35
Kamke 1117	✓	0.095	107	✓	0.125	91
Kamke 1118	✓	0.095	51	✓	0.102	43
Kamke 1119	✓	0.174	77	✓	0.043	24
Kamke 1120	✓	0.069	166	✓	0.225	123
Kamke 1121	✓	10.323	40	✓	0.021	26
Kamke 1122	✓	10.699	56	✓	0.159	34
Kamke 1123	✓	0.014	91	✓	0.055	45
Kamke 1124	✓	0.064	65	✓	0.086	29
Kamke 1125	✓	0.174	48	✓	0.051	36
Kamke 1126	✗	0	0	✓	0.043	26
Kamke 1127	✓	0.041	36	✓	0.028	31
Kamke 1128	✗	0	0	✓	0.227	35
Kamke 1129	✓	0.041	42	✓	0.046	30
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1130	✓	0.013	46	✓	0.011	31
Kamke 1131	✓	0.012	58	✓	0.076	35
Kamke 1132	✓	0.012	48	✓	0.076	31
Kamke 1133	✓	0.091	92	✓	0.113	47
Kamke 1134	✓	0.093	78	✓	0.047	21
Kamke 1135	✓	0.011	27	✓	0.01	17
Kamke 1136	✓	0.022	30	✓	0.032	20
Kamke 1137	✓	0.095	74	✓	0.051	25
Kamke 1138	✓	0.032	38	✓	0.072	29
Kamke 1139	✓	0.015	74	✓	0.075	43
Kamke 1140	✓	0.049	190	✓	0.021	77
Kamke 1141	✓	0.109	70	✓	0.055	49
Kamke 1142	✓	0.049	108	✓	0.096	59
Kamke 1143	✓	0.048	93	✓	0.114	67
Kamke 1144	✓	0.041	88	✓	0.086	67
Kamke 1145	✓	0.378	398	✓	0.201	287
Kamke 1146	✓	0.025	18	✓	0.008	15
Kamke 1147	✓	0.019	18	✓	0.007	15
Kamke 1148	✓	0.012	77	✓	0.011	35
Kamke 1149	✓	0.066	212	✓	0.015	47
Kamke 1150	✓	0.011	53	✓	0.067	31
Kamke 1151	✓	0.02	129	✓	0.09	43
Kamke 1152	✓	0.02	114	✓	0.228	67
Kamke 1153	✓	0.036	56	✓	0.027	33
Kamke 1154	✓	0.022	88	✓	0.131	57
Kamke 1155	✓	0.054	225	✓	0.04	69
Kamke 1156	✗	0	0	✓	0.141	73
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1157	✗	0	0	✗	0	0
Kamke 1158	✓	14.175	42	✓	0.231	180
Kamke 1159	✓	0.018	44	✓	0.016	19
Kamke 1160	✓	0.011	30	✓	0.012	23
Kamke 1161	✓	0.049	78	✓	0.011	31
Kamke 1162	✓	0.061	18	✓	0.01	15
Kamke 1163	✓	0.344	70	✓	0.046	50
Kamke 1164	✓	0.025	30	✓	0.023	23
Kamke 1165	✓	0.051	37	✓	0.015	19
Kamke 1166	✓	0.015	23	✓	0.012	18
Kamke 1167	✓	0.082	326	✓	0.03	63
Kamke 1168	✓	0.006	15	✓	0.008	11
Kamke 1169	✓	0.07	236	✓	0.025	51
Kamke 1170	✓	0.024	58	✓	0.036	45
Kamke 1171	✓	0.054	142	✓	0.132	51
Kamke 1172	✓	0.055	158	✓	0.034	57
Kamke 1173	✓	0.06	74	✓	0.085	45
Kamke 1174	✓	0.02	33	✓	0.021	24
Kamke 1175	✓	0.173	38	✓	0.053	33
Kamke 1176	✓	0.019	33	✓	0.031	15
Kamke 1177	✗	0	0	✓	0.065	39
Kamke 1178	✓	0.055	74	✓	0.023	28
Kamke 1179	✓	0.043	53	✓	0.032	19
Kamke 1180	✓	0.223	73	✓	0.048	53
Kamke 1181	✓	0.031	37	✓	0.017	25
Kamke 1182	✓	0.018	24	✓	0.012	20
Kamke 1183	✓	0.03	27	✓	0.011	22
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1184	✓	0.021	38	✓	0.028	29
Kamke 1185	✓	0.038	67	✓	0.03	35
Kamke 1186	✓	0.033	42	✓	0.023	34
Kamke 1187	✓	0.014	99	✓	0.014	53
Kamke 1188	✓	0.084	266	✓	0.168	135
Kamke 1189	✓	0.073	445	✓	0.03	85
Kamke 1190	✓	0.032	122	✓	0.104	41
Kamke 1191	✓	0.011	110	✓	0.015	25
Kamke 1192	✓	10.839	39	✓	0.137	53
Kamke 1193	✓	0.05	44	✓	0.039	40
Kamke 1194	✓	0.052	65	✓	0.059	44
Kamke 1195	✓	0.03	80	✓	0.122	94
Kamke 1196	✓	0.027	37	✓	0.036	27
Kamke 1197	✓	0.02	78	✓	0.044	49
Kamke 1198	✓	0.031	41	✓	0.047	33
Kamke 1199	✓	0.014	41	✓	0.018	32
Kamke 1200	✓	0.024	62	✓	0.016	33
Kamke 1201	✓	0.057	44	✓	0.019	34
Kamke 1202	✓	0.016	22	✓	0.034	15
Kamke 1203	✓	0.023	124	✓	0.021	30
Kamke 1204	✓	0.022	132	✓	0.053	37
Kamke 1205	✗	0	0	✗	0	0
Kamke 1206	✓	0.114	120	✓	0.069	87
Kamke 1207	✓	0.122	294	✓	0.227	119
Kamke 1208	✓	0.04	59	✓	0.044	39
Kamke 1209	✓	0.023	67	✓	0.047	48
Kamke 1210	✓	0.258	252	✓	0.661	93
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1211	✓	0.056	68	✓	0.058	41
Kamke 1212	✗	0	0	✗	0	0
Kamke 1213	✓	0.076	54	✓	0.059	59
Kamke 1214	✓	0.31	260	✓	0.601	73
Kamke 1215	✓	0.161	664	✓	0.196	167
Kamke 1216	✗	0	0	✗	0	0
Kamke 1217	✓	0.146	30	✓	0.037	27
Kamke 1218	✓	0.143	38	✓	0.04	33
Kamke 1219	✗	0	0	✓	0.084	79
Kamke 1220	✓	193.502	96	✓	0.02	51
Kamke 1221	✓	0.059	40	✓	0.026	53
Kamke 1222	✓	0.022	30	✓	0.013	23
Kamke 1223	✓	0.02	25	✓	0.017	39
Kamke 1224	✓	0.019	30	✓	0.015	23
Kamke 1225	✓	0.033	29	✓	0.036	24
Kamke 1226	✓	0.02	30	✓	0.043	25
Kamke 1227	✓	0.035	21	✓	0.014	15
Kamke 1228	✓	0.016	82	✓	0.092	59
Kamke 1229	✓	0.042	48	✓	0.019	41
Kamke 1230	✓	0.028	82	✓	0.114	36
Kamke 1231	✓	0.075	58	✓	0.05	57
Kamke 1232	✗	0	0	✓	0.208	418
Kamke 1233	✗	0	0	✓	0.131	418
Kamke 1234	✓	0.029	38	✗	0	0
Kamke 1235	✓	0.029	50	✓	0.474	43
Kamke 1236	✗	0	0	✗	0	0
Kamke 1237	✓	0.012	30	✓	0.126	21
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1238	✓	0.019	36	✓	0.023	34
Kamke 1239	✓	0.015	46	✓	0.955	35
Kamke 1240	✓	0.019	18	✓	0.052	15
Kamke 1241	✓	0.016	30	✓	0.206	29
Kamke 1242	✓	0.077	68	✓	0.594	42
Kamke 1243	✓	0.031	45	✓	0.438	27
Kamke 1244	✓	0.03	42	✓	0.241	35
Kamke 1245	✓	0.022	42	✓	0.064	35
Kamke 1246	✓	0.021	42	✓	1.063	35
Kamke 1247	✓	0.217	97	✓	0.033	27
Kamke 1248	✗	0	0	✓	0.936	150
Kamke 1249	✓	0.174	193	✓	0.08	134
Kamke 1250	✓	0.053	41	✓	0.075	52
Kamke 1251	✓	0.038	25	✓	0.05	20
Kamke 1252	✓	0.149	151	✓	0.056	124
Kamke 1253	✓	0.027	34	✓	0.009	16
Kamke 1254	✓	0.091	69	✓	0.115	44
Kamke 1255	✓	0.212	118	✓	0.108	42
Kamke 1256	✓	0.025	26	✓	0.143	51
Kamke 1257	✓	0.05	33	✓	0.358	27
Kamke 1258	✓	0.165	146	✓	0.054	110
Kamke 1259	✓	0.142	120	✓	0.059	92
Kamke 1260	✓	0.17	65	✓	0.846	76
Kamke 1261	✗	0	0	✓	0.257	124
Kamke 1262	✓	40.855	87	✓	0.403	55
Kamke 1263	✗	0	0	✓	0.108	52
Kamke 1264	✓	0.06	23	✓	0.126	19
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1265	✓	0.042	64	✓	0.236	97
Kamke 1266	✓	0.029	22	✓	0.025	19
Kamke 1267	✗	0	0	✓	0.067	41
Kamke 1268	✗	0	0	✓	0.147	39
Kamke 1269	✓	0.084	60	✓	0.093	40
Kamke 1270	✗	0	0	✓	0.199	54
Kamke 1271	✓	0.013	27	✓	0.009	17
Kamke 1272	✓	0.012	32	✓	0.086	25
Kamke 1273	✓	0.018	20	✓	0.308	17
Kamke 1274	✓	0.042	38	✓	0.013	19
Kamke 1275	✓	0.036	120	✓	0.524	55
Kamke 1276	✓	0.043	55	✓	0.405	31
Kamke 1277	✓	0.026	51	✓	0.4	29
Kamke 1278	✗	0	0	✗	0	0
Kamke 1279	✓	0.151	74	✓	1.144	32
Kamke 1280	✓	0.037	52	✓	0.159	41
Kamke 1281	✓	0.02	28	✓	0.09	19
Kamke 1282	✓	0.022	39	✓	0.086	27
Kamke 1283	✓	0.09	90	✓	0.2	52
Kamke 1284	✓	0.042	47	✓	0.022	42
Kamke 1285	✓	0.315	134	✓	0.146	52
Kamke 1286	✓	0.098	101	✓	0.033	32
Kamke 1287	✓	0.019	83	✓	0.026	27
Kamke 1288	✓	0.036	47	✓	0.032	23
Kamke 1289	✓	0.078	53	✓	0.154	35
Kamke 1290	✓	0.162	103	✓	0.033	47
Kamke 1291	✓	0.07	92	✓	0.072	62
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1292	✓	0.039	53	✓	0.097	31
Kamke 1293	✓	0.318	44	✓	0.072	35
Kamke 1294	✓	0.062	44	✓	0.07	35
Kamke 1295	✓	0.276	310	✓	0.522	113
Kamke 1296	✓	0.536	356	✓	0.49	165
Kamke 1297	✓	0.033	52	✓	0.023	61
Kamke 1298	✓	0.077	162	✓	0.184	143
Kamke 1299	✓	0.014	19	✓	0.023	31
Kamke 1300	✓	0.015	41	✓	0.059	32
Kamke 1301	✓	0.031	31	✓	0.041	22
Kamke 1302	✓	0.082	243	✓	0.071	117
Kamke 1303	✗	0	0	✓	0.214	501
Kamke 1304	✓	0.032	50	✓	0.443	41
Kamke 1305	✓	0.064	47	✓	0.288	47
Kamke 1306	✗	0	0	✓	0.612	95
Kamke 1307	✓	0.084	54	✓	0.056	39
Kamke 1308	✓	0.021	41	✓	0.02	36
Kamke 1309	✓	0.074	84	✓	0.109	73
Kamke 1310	✓	0.012	31	✓	0.011	20
Kamke 1311	✓	0.127	63	✓	0.203	52
Kamke 1312	✓	0.024	32	✓	0.023	26
Kamke 1313	✓	0.2	87	✓	0.092	39
Kamke 1314	✓	0.178	87	✓	0.081	35
Kamke 1315	✓	0.027	44	✓	0.022	45
Kamke 1316	✓	0.089	38	✓	0.039	18
Kamke 1317	✓	0.12	38	✓	0.039	13
Kamke 1318	✓	0.28	172	✓	0.141	122
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1319	✓	0.096	118	✓	0.226	37
Kamke 1320	✓	0.066	21	✓	0.046	17
Kamke 1321	✓	0.026	18	✓	0.031	15
Kamke 1322	✓	0.031	44	✓	0.033	44
Kamke 1323	✗	0	0	✓	0.023	20
Kamke 1324	✓	0.029	25	✓	0.033	21
Kamke 1325	✓	0.257	52	✓	0.147	103
Kamke 1326	✓	0.025	29	✓	0.03	26
Kamke 1327	✓	0.162	104	✓	0.124	85
Kamke 1328	✓	0.022	36	✓	0.031	32
Kamke 1329	✗	0	0	✓	0.395	64
Kamke 1330	✗	0	0	✓	1.209	1147
Kamke 1331	✓	0.044	55	✓	0.026	19
Kamke 1332	✓	0.024	26	✓	0.023	19
Kamke 1333	✓	0.108	70	✓	0.075	45
Kamke 1334	✓	0.194	114	✓	0.095	97
Kamke 1335	✓	0.304	893	✓	0.057	57
Kamke 1336	✓	0.052	70	✓	0.056	50
Kamke 1337	✓	0.082	62	✓	0.043	44
Kamke 1338	✓	0.067	40	✓	0.039	31
Kamke 1339	✓	0.261	66	✓	0.166	89
Kamke 1340	✓	0.036	32	✓	0.034	29
Kamke 1341	✗	0	0	✓	0.197	195
Kamke 1342	✓	0.042	51	✓	0.078	31
Kamke 1343	✗	0	0	✓	0.161	62
Kamke 1344	✓	0.561	173	✓	0.199	23
Kamke 1345	✓	0.03	52	✓	0.075	32
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1346	✓	0.33	87	✓	0.052	25
Kamke 1347	✓	0.078	31	✓	0.03	19
Kamke 1348	✗	0	0	✓	0.182	101
Kamke 1349	✓	0.089	76	✓	0.111	73
Kamke 1350	✓	0.01	25	✓	0.01	21
Kamke 1351	✓	0.028	50	✓	0.195	30
Kamke 1352	✓	0.015	89	✓	0.059	43
Kamke 1353	✓	0.109	119	✓	0.416	68
Kamke 1354	✓	0.072	108	✓	0.332	32
Kamke 1355	✓	0.131	59	✓	0.158	37
Kamke 1356	✓	0.294	90	✓	0.083	29
Kamke 1357	✓	0.662	288	✓	0.13	103
Kamke 1358	✓	0.066	66	✓	0.24	21
Kamke 1359	✓	0.102	86	✓	0.092	57
Kamke 1360	✓	0.094	68	✓	0.075	47
Kamke 1361	✓	0.481	38	✓	0.036	33
Kamke 1362	✗	0	0	✓	0.258	109
Kamke 1363	✓	0.781	236	✓	0.167	171
Kamke 1364	✓	0.169	42	✓	0.117	33
Kamke 1365	✓	0.096	72	✓	0.065	65
Kamke 1366	✓	0.023	31	✓	0.01	24
Kamke 1367	✗	0	0	✓	0.492	96
Kamke 1368	✓	0.028	106	✓	0.093	81
Kamke 1369	✓	0.104	75	✓	0.073	61
Kamke 1370	✓	0.03	53	✓	0.012	19
Kamke 1371	✓	0.022	48	✓	0.055	37
Kamke 1372	✗	0	0	✓	0.289	120
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1373	✗	0	0	✓	0.245	92
Kamke 1374	✓	0.037	32	✓	0.06	29
Kamke 1375	✓	0.052	54	✓	0.079	39
Kamke 1376	✓	0.099	82	✓	0.04	71
Kamke 1377	✓	0.238	109	✓	0.552	91
Kamke 1378	✓	0.054	65	✓	0.055	50
Kamke 1379	✓	0.08	99	✓	0.069	65
Kamke 1380	✓	0.303	132	✓	0.113	75
Kamke 1381	✓	0.593	589	✓	0.228	219
Kamke 1382	✓	0.714	154	✓	0.125	116
Kamke 1383	✓	0.142	50	✓	0.056	39
Kamke 1384	✓	0.034	110	✓	0.262	73
Kamke 1385	✓	0.02	78	✓	0.073	61
Kamke 1386	✓	0.091	108	✓	0.073	68
Kamke 1387	✓	0.039	50	✓	0.034	36
Kamke 1388	✓	0.294	235	✓	0.086	82
Kamke 1389	✓	0.38	217	✓	0.079	74
Kamke 1390	✓	0.042	51	✓	0.046	25
Kamke 1391	✓	0.06	27	✓	0.027	20
Kamke 1392	✓	94.147	1763961	✓	2.914	613
Kamke 1393	✓	20.566	413606	✓	0.375	299
Kamke 1394	✓	0.05	115	✓	1.01	89
Kamke 1395	✓	0.16	78	✓	0.106	43
Kamke 1396	✓	1.408	211	✓	0.339	189
Kamke 1397	✓	0.028	38	✓	0.417	27
Kamke 1398	✗	0	0	✓	0.312	69
Kamke 1399	✓	0.054	72	✓	0.085	46
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1400	✓	0.052	60	✓	0.061	37
Kamke 1401	✓	0.014	93	✓	0.055	45
Kamke 1402	✗	0	0	✓	0.286	69
Kamke 1403	✗	0	0	✓	1.053	311
Kamke 1404	✓	0.024	33	✓	0.047	24
Kamke 1405	✓	0.076	77	✓	0.089	47
Kamke 1406	✗	0	0	✓	0.151	53
Kamke 1407	✗	0	0	✓	2.914	2907
Kamke 1408	✗	0	0	✗	0	0
Kamke 1409	✓	0.025	43	✓	0.023	39
Kamke 1410	✓	0.134	481	✓	0.276	253
Kamke 1411	✓	0.336	42	✓	0.048	27
Kamke 1412	✓	0.017	29	✓	0.011	27
Kamke 1413	✗	0	0	✓	0.072	12
Kamke 1414	✓	1.141	231	✓	0.293	97
Kamke 1415	✓	0.841	273	✓	0.174	43
Kamke 1416	✓	0.194	46	✓	0.279	31
Kamke 1417	✓	0.142	52	✓	0.158	35
Kamke 1418	✗	0	0	✓	17.292	61
Kamke 1419	✗	0	0	✓	0.371	13
Kamke 1420	✓	0.435	134	✓	0.307	123
Kamke 1421	✓	0.247	67	✓	0.076	27
Kamke 1422	✓	0.088	64	✓	0.247	57
Kamke 1423	✓	0.072	70	✓	0.261	165
Kamke 1424	✓	0.17	90	✓	0.27	125
Kamke 1425	✓	0.734	236	✓	0.441	101
Kamke 1426	✓	6.144	4128	✓	0.591	599
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1427	✗	0	0	✓	1.834	262
Kamke 1428	✓	0.39	104	✓	0.297	219
Kamke 1429	✓	0.058	51	✓	0.05	25
Kamke 1430	✓	0.453	22	✓	0.349	122
Kamke 1431	✓	0.187	80	✓	0.405	35
Kamke 1432	✓	0.089	37	✓	0.044	25
Kamke 1433	✓	0.201	46	✓	0.119	32
Kamke 1434	✓	108.524	1596424	✓	1.724	559
Kamke 1435	✓	0.154	70	✓	0.146	41
Kamke 1436	✓	0.543	42	✓	0.27	140
Kamke 1437	✓	0.282	44	✓	0.172	29
Kamke 1438	✓	0.975	615	✓	0.229	105
Kamke 1439	✗	0	0	✗	0	0
Kamke 1440	✗	0	0	✗	0	0
Kamke 1441	✗	0	0	✗	0	0
Kamke 1442	✗	0	0	✓	0.088	31
Kamke 1443	✗	0	0	✗	0	0
Kamke 1444	✗	0	0	✓	0.04	37
Kamke 1445	✗	0	0	✓	0.227	21
Kamke 1446	✓	0.024	33	✓	0.046	28
Kamke 1447	✓	0.022	29	✓	0.048	24
Kamke 1448	✓	0.33	149	✓	0.109	87
Kamke 1449	✓	0.023	53	✓	0.037	53
Kamke 1450	✗	0	0	✓	0.363	2294
Kamke 1451	✓	0.021	168	✓	0.125	114
Kamke 1452	✓	0.008	54	✓	0.01	35
Kamke 1453	✓	0.608	128	✓	0.153	230
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1454	✓	0.01	79	✓	0.056	55
Kamke 1455	✓	0.028	127	✓	0.152	71
Kamke 1456	✓	0.035	183	✓	0.062	74
Kamke 1457	✗	0	0	✗	0	0
Kamke 1458	✗	0	0	✗	0	0
Kamke 1459	✗	0	0	✗	0	0
Kamke 1460	✗	0	0	✗	0	0
Kamke 1461	✗	0	0	✗	0	0
Kamke 1462	✗	0	0	✗	0	0
Kamke 1463	✗	0	0	✗	0	0
Kamke 1464	✓	0.006	34	✓	0.01	27
Kamke 1465	✓	0.086	95	✓	0.089	467
Kamke 1466	✓	0.017	46	✓	0.02	36
Kamke 1467	✓	0.006	84	✓	0.023	644
Kamke 1468	✓	0.086	57	✓	0.138	64
Kamke 1469	✓	0.028	72	✓	0.028	37
Kamke 1470	✗	0	0	✓	0.098	36
Kamke 1471	✗	0	0	✓	0.21	36
Kamke 1472	✗	0	0	✓	0.308	33
Kamke 1473	✗	0	0	✗	0	0
Kamke 1474	✗	0	0	✗	0	0
Kamke 1475	✓	0.023	38	✓	0.021	26
Kamke 1476	✗	0	0	✗	0	0
Kamke 1477	✓	0.163	48	✓	0.022	41
Kamke 1478	✓	0.033	104	✓	0.135	48
Kamke 1479	✓	0.139	153	✓	0.24	92
Kamke 1480	✓	0.208	93	✓	0.26	35
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1481	✓	0.983	431	✓	0.052	44
Kamke 1482	✗	0	0	✓	0.395	2294
Kamke 1483	✓	0.146	112	✓	0.267	37
Kamke 1484	✗	0	0	✗	0	0
Kamke 1485	✓	0.119	66	✓	0.401	47
Kamke 1486	✓	0.169	65	✓	0.251	50
Kamke 1487	✗	0	0	✓	0.11	38
Kamke 1488	✓	0.545	102	✓	0.565	151
Kamke 1489	✗	0	0	✗	0	0
Kamke 1490	✓	0.021	33	✓	0.076	18
Kamke 1491	✓	0.047	102	✓	0.094	88
Kamke 1492	✓	0.396	43	✓	0.125	39
Kamke 1493	✓	7.346	2582	✓	0.355	1849
Kamke 1494	✓	0.028	43	✓	0.019	25
Kamke 1495	✓	0.019	24	✓	0.014	16
Kamke 1496	✓	0.263	63	✓	0.026	67
Kamke 1497	✓	0.46	135	✓	0.254	77
Kamke 1498	✓	8.356	584	✓	0.237	53
Kamke 1499	✓	0.233	97	✓	0.246	25
Kamke 1500	✗	0	0	✓	0.208	55
Kamke 1501	✓	0.188	86	✓	0.224	37
Kamke 1502	✓	0.055	98	✓	0.486	109
Kamke 1503	✓	0.112	62	✓	0.027	86
Kamke 1504	✓	0.109	43	✓	0.196	18
Kamke 1505	✗	0	0	✓	0.151	79
Kamke 1506	✗	0	0	✓	0.056	43
Kamke 1507	✗	0	0	✓	0.67	1421
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1508	✓	0.818	143	✓	0.144	81
Kamke 1509	✓	0.011	34	✓	0.053	30
Kamke 1510	✗	0	0	✗	0	0
Kamke 1511	✓	0.038	51	✓	0.033	37
Kamke 1512	✓	0.041	29	✓	0.013	18
Kamke 1513	✓	0.083	25	✓	0.2	20
Kamke 1514	✓	0.738	102	✓	0.503	151
Kamke 1515	✗	0	0	✗	0	0
Kamke 1516	✗	0	0	✓	0.457	263
Kamke 1517	✓	0.405	30686	✓	0.717	1771
Kamke 1518	✓	0.248	106	✓	0.463	56
Kamke 1519	✓	0.031	65	✓	0.24	20
Kamke 1520	✗	0	0	✓	0.586	279
Kamke 1521	✓	0.067	35	✓	0.397	31
Kamke 1522	✓	0.021	44	✓	0.04	31
Kamke 1523	✓	0.121	74	✓	0.439	26
Kamke 1524	✓	0.142	96	✓	0.495	104
Kamke 1525	✓	0.434	102	✓	0.487	142
Kamke 1526	✗	0	0	✓	0.216	20
Kamke 1527	✗	0	0	✓	0.542	500
Kamke 1528	✓	0.61	72	✓	0.162	69
Kamke 1529	✗	0	0	✓	0.079	43
Kamke 1530	✗	0	0	✓	0.234	113
Kamke 1531	✗	0	0	✗	0	0
Kamke 1532	✓	0.018	103	✓	0.098	58
Kamke 1533	✓	0.018	113	✓	0.095	58
Kamke 1534	✓	0.005	24	✓	0.01	21
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1535	✓	1.336	219	✓	0.018	36
Kamke 1536	✓	0.006	76	✓	0.014	50
Kamke 1537	✓	0.842	1722	✓	0.135	67
Kamke 1538	✓	0.261	66	✓	0.423	46
Kamke 1539	✓	0.008	44	✓	0.029	35
Kamke 1540	✗	0	0	✗	0	0
Kamke 1541	✗	0	0	✗	0	0
Kamke 1542	✗	0	0	✗	0	0
Kamke 1543	✗	0	0	✗	0	0
Kamke 1544	✗	0	0	✓	0.017	41
Kamke 1545	✓	0.172	40	✓	0.078	31
Kamke 1546	✓	0.671	301	✓	0.052	81
Kamke 1547	✗	0	0	✓	0.023	87
Kamke 1548	✓	0.086	50	✓	0.067	32
Kamke 1549	✓	0.013	34	✓	0.022	26
Kamke 1550	✓	4.957	262	✓	0.703	159
Kamke 1551	✓	0.417	110	✓	0.283	63
Kamke 1552	✗	0	0	✓	0.088	89
Kamke 1553	✓	0.025	29	✓	0.012	18
Kamke 1554	✓	0.027	29	✓	0.013	18
Kamke 1555	✓	0.064	156	✓	0.165	69
Kamke 1556	✓	0.023	30	✓	0.016	19
Kamke 1557	✓	0.064	146	✓	0.124	69
Kamke 1558	✓	0.167	319	✓	0.174	93
Kamke 1559	✓	0.268	100	✓	0.168	33
Kamke 1560	✓	0.022	29	✓	0.014	18
Kamke 1561	✓	3.951	400	✓	0.275	77
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1562	✓	1.085	140	✓	0.398	93
Kamke 1563	✓	1.86	232	✓	0.3	83
Kamke 1564	✓	1.318	230	✓	0.273	164
Kamke 1565	✓	0.523	242	✓	0.403	85
Kamke 1566	✓	0.626	238	✓	0.346	37
Kamke 1567	✓	0.022	30	✓	0.015	19
Kamke 1568	✓	0.013	122	✓	0.027	89
Kamke 1569	✗	0	0	✓	0.505	81
Kamke 1570	✓	0.148	470	✓	0.098	57
Kamke 1571	✓	0.091	390	✓	0.207	151
Kamke 1572	✗	0	0	✓	0.421	37
Kamke 1573	✗	0	0	✓	0.045	65
Kamke 1574	✗	0	0	✓	0.923	345
Kamke 1575	✗	0	0	✓	0.399	1277
Kamke 1576	✗	0	0	✓	0.027	67
Kamke 1577	✓	1.109	44	✓	0.009	21
Kamke 1578	✗	0	0	✓	1.322	92
Kamke 1579	✓	0.645	104	✓	0.304	78
Kamke 1580	✓	0.947	234	✓	0.709	164
Kamke 1581	✗	0	0	✗	0	0
Kamke 1582	✓	0.472	787	✗	0	0
Kamke 1583	✓	95.214	120	✓	0.03	40
Kamke 1584	✓	2.635	216	✓	0.25	118
Kamke 1585	✓	0.211	214	✓	0.063	806
Kamke 1586	✗	0	0	✗	0	0
Kamke 1587	✓	0.313	492	✓	0.526	200
Kamke 1588	✓	5.679	114	✓	0.139	90
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1589	✓	0.049	670	✓	8.655	27500
Kamke 1590	✗	0	0	✓	3.219	1258
Kamke 1591	✓	0.065	26	✓	0.036	12
Kamke 1592	✓	0.037	14	✓	0.013	10
Kamke 1593	✗	0	0	✗	0	0
Kamke 1594	✓	0.366	373	✓	0.213	59
Kamke 1595	✗	0	0	✗	0	0
Kamke 1596	✗	0	0	✗	0	0
Kamke 1597	✓	2.205	242	✓	0.027	21
Kamke 1598	✗	0	0	✗	0	0
Kamke 1599	✗	0	0	✗	0	0
Kamke 1600	✓	1.969	1017	✓	0.097	89
Kamke 1601	✗	0	0	✓	3.185	184
Kamke 1602	✓	86.567	46	✓	0.28	73
Kamke 1603	✗	0	0	✓	72.533	13291
Kamke 1604	✓	0.085	34	✓	0.42	23
Kamke 1605	✗	0	0	✓	1.417	109
Kamke 1606	✗	0	0	✗	0	0
Kamke 1607	✓	0.179	79	✓	0.121	49
Kamke 1608	✗	0	0	✗	0	0
Kamke 1609	✗	0	0	✗	0	0
Kamke 1610	✗	0	0	✓	0.293	92
Kamke 1611	✗	0	0	✓	0.573	57
Kamke 1612	✗	0	0	✓	1.343	57
Kamke 1613	✗	0	0	✓	0.022	27
Kamke 1614	✗	0	0	✓	0.066	33
Kamke 1615	✗	0	0	✓	4.551	116
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1616	✗	0	0	✓	1.353	63
Kamke 1617	✗	0	0	✗	0	0
Kamke 1618	✗	0	0	✓	1.706	56
Kamke 1619	✗	0	0	✗	0	0
Kamke 1620	✗	0	0	✓	0.127	253
Kamke 1621	✗	0	0	✓	1.231	8191
Kamke 1622	✗	0	0	✓	0.352	775
Kamke 1623	✗	0	0	✗	0	0
Kamke 1624	✗	0	0	✓	2.01	135
Kamke 1625	✗	0	0	✗	0	0
Kamke 1626	✗	0	0	✓	0.227	48
Kamke 1627	✗	0	0	✓	0.954	63
Kamke 1628	✗	0	0	✗	0	0
Kamke 1629	✗	0	0	✓	0.037	38
Kamke 1630	✓	11.659	3227	✓	0.643	803
Kamke 1631	✗	0	0	✓	0.049	38
Kamke 1632	✓	0.064	46	✓	0.098	29
Kamke 1633	✗	0	0	✓	0.283	97
Kamke 1634	✗	0	0	✗	0	0
Kamke 1635	✗	0	0	✓	0.177	79
Kamke 1636	✗	0	0	✓	0.896	59
Kamke 1637	✗	0	0	✓	0.555	58
Kamke 1638	✗	0	0	✓	0.189	126
Kamke 1639	✗	0	0	✓	3.543	56
Kamke 1640	✗	0	0	✓	0.188	70
Kamke 1641	✓	2.009	57	✓	0.038	29
Kamke 1642	✗	0	0	✗	0	0

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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1643	✗	0	0	✗	0	0
Kamke 1644	✗	0	0	✓	0.563	59
Kamke 1645	✗	0	0	✗	0	0
Kamke 1646	✓	10.738	262	✓	0.167	94
Kamke 1647	✓	50.981	59	✓	0.479	123
Kamke 1648	✗	0	0	✓	2.064	413
Kamke 1649	✗	0	0	✗	0	0
Kamke 1650	✓	0.023	30	✓	0.238	18
Kamke 1651	✓	0.264	414	✓	0.16	31
Kamke 1652	✗	0	0	✓	0.313	36
Kamke 1653	✓	0.066	75	✓	0.135	55
Kamke 1654	✓	0.289	308	✓	0.186	49
Kamke 1655	✓	0.833	350	✓	0.218	106
Kamke 1656	✗	0	0	✓	0.747	771
Kamke 1657	✓	0.15	33	✓	0.274	35
Kamke 1658	✗	0	0	✓	0.152	117
Kamke 1659	✗	0	0	✓	0.097	60
Kamke 1660	✗	0	0	✓	0.934	132
Kamke 1661	✓	0.031	92	✓	0.085	51
Kamke 1662	✗	0	0	✓	0.395	56
Kamke 1663	✗	0	0	✓	0.944	151
Kamke 1664	✗	0	0	✓	3.157	185
Kamke 1665	✗	0	0	✓	0.628	84
Kamke 1666	✗	0	0	✓	0.955	93
Kamke 1667	✗	0	0	✓	1.523	124
Kamke 1668	✓	0.071	60	✓	0.169	24
Kamke 1669	✓	102.666	126	✓	0.125	32
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1670	✓	80.761	50	✓	0.352	35
Kamke 1671	✓	0.034	59	✓	0.093	35
Kamke 1672	✗	0	0	✓	1.101	67
Kamke 1673	✗	0	0	✓	0.809	65
Kamke 1674	✓	0.061	106	✓	0.071	27
Kamke 1675	✗	0	0	✗	0	0
Kamke 1676	✓	50.861	133	✓	0.502	79
Kamke 1677	✗	0	0	✓	2.275	101
Kamke 1678	✗	0	0	✓	0.277	60
Kamke 1679	✓	0.085	33	✓	0.181	27
Kamke 1680	✗	0	0	✓	0.645	103
Kamke 1681	✗	0	0	✓	0.062	31
Kamke 1682	✗	0	0	✓	0.609	102
Kamke 1683	✓	0.073	26	✓	0.117	23
Kamke 1684	✗	0	0	✓	1.805	108
Kamke 1685	✗	0	0	✗	0	0
Kamke 1686	✗	0	0	✓	1.063	160
Kamke 1687	✓	0.069	262	✓	0.235	23
Kamke 1688	✓	249.775	166	✓	0.258	32
Kamke 1689	✓	0.644	329	✓	0.286	37
Kamke 1690	✗	0	0	✓	0.938	97
Kamke 1691	✗	0	0	✓	1.129	254
Kamke 1692	✗	0	0	✓	3.887	165
Kamke 1693	✗	0	0	✓	0.309	68
Kamke 1694	✓	0.19	115	✓	0.317	55
Kamke 1695	✗	0	0	✓	0.719	103
Kamke 1696	✗	0	0	✓	0.638	102
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1697	✓	0.061	94	✓	0.229	39
Kamke 1698	✓	0.04	72	✗	0	0
Kamke 1699	✓	0.037	40	✓	0.275	33
Kamke 1700	✓	0.077	44	✓	0.465	79
Kamke 1701	✓	0.181	97	✓	0.356	79
Kamke 1702	✗	0	0	✗	0	0
Kamke 1703	✓	0.092	63	✓	0.064	25
Kamke 1704	✗	0	0	✗	0	0
Kamke 1705	✗	0	0	✗	0	0
Kamke 1706	✗	0	0	✗	0	0
Kamke 1707	✓	0.072	31	✓	0.27	39
Kamke 1708	✗	0	0	✓	1.15	73
Kamke 1709	✗	0	0	✓	2.025	84
Kamke 1710	✗	0	0	✓	2.878	91
Kamke 1711	✗	0	0	✓	0.514	81
Kamke 1712	✓	10.27	70	✓	0.08	61
Kamke 1713	✗	0	0	✓	0.298	60
Kamke 1714	✓	0.063	25	✓	0.294	69
Kamke 1715	✓	0.036	26	✓	0.287	25
Kamke 1716	✓	0.649	172	✓	0.419	68
Kamke 1717	✓	1.563	290	✓	0.468	108
Kamke 1718	✓	1.483	744	✓	0.258	145
Kamke 1719	✗	0	0	✓	0.524	70
Kamke 1720	✗	0	0	✓	0.514	174
Kamke 1721	✗	0	0	✗	0	0
Kamke 1722	✓	1.948	797	✓	0.854	98
Kamke 1723	✓	0.846	259	✓	0.344	16
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1724	✓	0.219	38	✓	0.748	21
Kamke 1725	✓	0.342	75	✓	0.722	105
Kamke 1726	✓	0.713	75	✓	0.096	39
Kamke 1727	✓	0.175	129	✓	0.438	95
Kamke 1728	✓	0.006	31	✓	0.279	24
Kamke 1729	✗	0	0	✗	0	0
Kamke 1730	✓	0.466	127	✓	0.331	53
Kamke 1731	✓	1.396	359	✓	0.345	63
Kamke 1732	✗	0	0	✗	0	0
Kamke 1733	✓	2.508	437	✓	0.342	71
Kamke 1734	✗	0	0	✗	0	0
Kamke 1735	✗	0	0	✗	0	0
Kamke 1736	✓	8.179	285	✓	0.336	49
Kamke 1737	✗	0	0	✗	0	0
Kamke 1738	✗	0	0	✗	0	0
Kamke 1739	✗	0	0	✗	0	0
Kamke 1740	✓	0.026	16	✓	0.298	13
Kamke 1741	✓	0.092	17	✓	0.337	37
Kamke 1742	✗	0	0	✓	0.176	60
Kamke 1743	✓	18.072	2761	✓	0.364	71
Kamke 1744	✓	0.952	173	✓	0.46	95
Kamke 1745	✓	0.299	204	✓	0.622	293
Kamke 1746	✗	0	0	✓	0.742	207
Kamke 1747	✓	0.027	20	✓	0.284	17
Kamke 1748	✓	0.094	43	✓	0.405	67
Kamke 1749	✓	0.535	181	✓	0.558	57
Kamke 1750	✓	3.804	2281	✓	0.508	87
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1751	✗	0	0	✗	0	0
Kamke 1752	✓	0.125	26	✓	0.359	33
Kamke 1753	✓	0.316	43	✓	0.385	147
Kamke 1754	✓	0.034	17	✓	0.308	15
Kamke 1755	✗	0	0	✓	0.581	1028
Kamke 1756	✓	0.285	111	✓	0.659	79
Kamke 1757	✗	0	0	✗	0	0
Kamke 1758	✓	0.064	36	✓	0.328	88
Kamke 1759	✓	0.036	18	✓	0.299	31
Kamke 1760	✗	0	0	✓	0.065	114
Kamke 1761	✗	0	0	✗	0	0
Kamke 1762	✗	0	0	✓	1.078	106
Kamke 1763	✓	0.139	35	✓	0.328	234
Kamke 1764	✓	0.062	52	✓	0.447	18
Kamke 1765	✓	0.125	24	✓	0.306	31
Kamke 1766	✓	0.045	21	✓	0.308	84
Kamke 1767	✓	0.075	55	✓	0.847	50
Kamke 1768	✓	0.114	87	✓	0.328	43
Kamke 1769	✓	0.045	18	✓	0.314	21
Kamke 1770	✓	0.754	28	✓	0.365	26
Kamke 1771	✓	0.08	21	✓	0.406	21
Kamke 1772	✓	0.905	37	✓	0.413	47
Kamke 1773	✓	0.183	44	✓	0.317	28
Kamke 1774	✓	1.314	93	✓	0.508	155
Kamke 1775	✓	0.131	29	✓	0.369	31
Kamke 1776	✗	0	0	✓	0.619	88
Kamke 1777	✗	0	0	✓	0.704	83
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1778	✓	0.522	75	✓	0.653	369
Kamke 1779	✗	0	0	✓	0.784	130
Kamke 1780	✗	0	0	✓	0.834	172
Kamke 1781	✓	0.08	19	✓	0.333	11
Kamke 1782	✓	0.087	93	✓	0.329	56
Kamke 1783	✓	1.381	26	✓	0.431	23
Kamke 1784	✓	0.26	74	✓	1.007	49
Kamke 1785	✓	0.363	95	✓	0.602	83
Kamke 1786	✓	1.	95	✓	0.121	59
Kamke 1787	✗	0	0	✓	0.236	84
Kamke 1788	✗	0	0	✗	0	0
Kamke 1789	✗	0	0	✗	0	0
Kamke 1790	✓	22.636	182	✓	0.207	219
Kamke 1791	✓	22.874	164	✓	0.293	90
Kamke 1792	✓	26.063	222	✓	0.718	192
Kamke 1793	✓	1.347	113	✓	0.354	40
Kamke 1794	✓	1.264	98	✓	0.378	46
Kamke 1795	✓	0.256	116	✓	1.148	793
Kamke 1796	✓	0.326	66	✓	0.492	51
Kamke 1797	✗	0	0	✗	0	0
Kamke 1798	✗	0	0	✓	0.522	166
Kamke 1799	✓	1.83	88	✓	0.419	70
Kamke 1800	✓	0.5	84	✓	0.35	67
Kamke 1801	✗	0	0	✗	0	0
Kamke 1802	✗	0	0	✗	0	0
Kamke 1803	✓	18.566	10387	✓	3.826	230971
Kamke 1804	✓	2.904	415	✓	0.334	31
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1805	✓	1.831	436	✓	0.347	34
Kamke 1806	✗	0	0	✓	5.534	916
Kamke 1807	✗	0	0	✗	0	0
Kamke 1808	✓	103.91	172	✓	1.13	72
Kamke 1809	✗	0	0	✓	0.953	382
Kamke 1810	✓	0.105	1677	✓	0.459	55
Kamke 1811	✗	0	0	✓	4.477	1864
Kamke 1812	✓	0.028	29	✓	0.035	19
Kamke 1813	✗	0	0	✓	0.388	146
Kamke 1814	✓	13.092	116	✓	0.155	90
Kamke 1815	✗	0	0	✓	0.937	74
Kamke 1816	✗	0	0	✓	1.509	46
Kamke 1817	✗	0	0	✓	0.554	40
Kamke 1818	✗	0	0	✓	0.75	66
Kamke 1819	✗	0	0	✓	0.42	42
Kamke 1820	✗	0	0	✓	1.082	81
Kamke 1821	✗	0	0	✓	2.66	54
Kamke 1822	✓	1.072	371	✓	1.424	295
Kamke 1823	✗	0	0	✓	0.756	423
Kamke 1824	✓	0.337	347	✓	1.62	99
Kamke 1825	✗	0	0	✓	0.989	50
Kamke 1826	✓	0.727	119	✓	0.624	201
Kamke 1827	✗	0	0	✓	3.053	81
Kamke 1828	✓	0.01	32	✓	0.95	67
Kamke 1829	✓	0.006	24	✓	0.701	32
Kamke 1830	✓	0.028	24	✓	0.904	312
Kamke 1831	✗	0	0	✓	1.107	191
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#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1832	✗	0	0	✓	1.597	117
Kamke 1833	✗	0	0	✓	4.19	145
Kamke 1834	✗	0	0	✓	0.839	86
Kamke 1835	✓	0.116	143	✗	0	0
Kamke 1836	✗	0	0	✓	1.194	94
Kamke 1837	✗	0	0	✓	0.731	95
Kamke 1838	✗	0	0	✓	0.924	73
Kamke 1839	✗	0	0	✓	1.214	125
Kamke 1840	✗	0	0	✓	1.266	127
Kamke 1841	✗	0	0	✓	0.534	60
Kamke 1842	✓	0.166	286	✓	0.995	190
Kamke 1843	✓	2.876	409	✓	0.716	77
Kamke 1844	✗	0	0	✓	0.67	26
Kamke 1845	✗	0	0	✓	0.609	22
Kamke 1846	✓	0.042	51	✓	0.013	28
Kamke 1847	✓	0.126	95	✓	0.628	49
Kamke 1848	✗	0	0	✓	1.419	789
Kamke 1849	✓	0.574	426	✓	0.952	337
Kamke 1850	✗	0	0	✓	1.853	163
Kamke 1851	✗	0	0	✗	0	0
Kamke 1852	✓	0.034	28	✓	0.687	30
Kamke 1853	✗	0	0	✓	1.072	110
Kamke 1854	✗	0	0	✗	0	0
Kamke 1855	✗	0	0	✗	0	0
Kamke 1856	✓	0.006	22	✓	0.048	19
Kamke 1857	✓	0.036	39	✓	0.045	35
Kamke 1858	✓	0.01	182	✓	0.049	64
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1859	✓	0.006	51	✓	0.035	38
Kamke 1860	✓	0.046	696	✓	0.072	237
Kamke 1861	✓	0.012	183	✓	0.102	144
Kamke 1862	✓	0.111	52	✓	0.034	42
Kamke 1863	✓	0.007	84	✓	0.034	35
Kamke 1864	✓	0.013	59	✓	0.038	48
Kamke 1865	✓	1.187	2062	✓	0.124	334
Kamke 1866	✓	0.029	132	✓	0.032	39
Kamke 1867	✓	0.083	124	✓	0.034	42
Kamke 1868	✓	0.046	162	✓	0.067	64
Kamke 1869	✓	0.125	118	✓	0.055	51
Kamke 1870	✓	0.128	122	✓	0.101	47
Kamke 1871	✓	0.163	180	✓	0.068	71
Kamke 1872	✓	0.059	162	✓	0.059	65
Kamke 1873	✓	0.045	322	✓	0.056	52
Kamke 1874	✓	0.139	131	✓	0.407	57
Kamke 1875	✗	0	0	✓	0.918	1633
Kamke 1876	✓	0.105	41	✓	0.125	18
Kamke 1877	✓	0.005	31	✓	0.032	33
Kamke 1878	✓	0.012	39	✓	0.049	39
Kamke 1879	✓	0.035	58	✓	0.048	54
Kamke 1880	✗	0	0	✓	0.07	23
Kamke 1881	✓	0.035	44	✓	0.026	48
Kamke 1882	✓	0.442	928	✓	0.073	118
Kamke 1883	✓	0.572	614	✓	0.099	80
Kamke 1884	✓	0.214	226	✓	0.099	69
Kamke 1885	✗	0	0	✓	0.081	47
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1886	✓	0.02	115	✓	0.057	50
Kamke 1887	✓	0.532	5748	✓	0.127	418
Kamke 1888	✓	24.084	37858	✓	0.224	634
Kamke 1889	✓	0.1	554	✓	0.043	72
Kamke 1890	✗	0	0	✗	0	0
Kamke 1891	✓	0.432	766	✓	0.048	64
Kamke 1892	✓	0.388	4815	✓	0.141	868
Kamke 1893	✗	0	0	✓	1.164	4516
Kamke 1894	✗	0	0	✓	0.872	2511
Kamke 1895	✓	0.45	7517	✓	0.222	1187
Kamke 1896	✓	0.194	1132	✓	0.054	75
Kamke 1897	✓	0.111	284	✓	0.154	98
Kamke 1898	✓	0.043	420	✓	0.065	73
Kamke 1899	✓	0.011	112	✓	0.073	52
Kamke 1900	✓	0.01	94	✓	0.071	50
Kamke 1901	✓	0.011	105	✓	0.06	48
Kamke 1902	✓	0.016	226	✓	0.053	56
Kamke 1903	✓	0.088	1304	✓	0.146	312
Kamke 1904	✓	0.066	1445	✓	0.087	312
Kamke 1905	✗	0	0	✗	0	0
Kamke 1906	✓	0.05	278	✓	0.073	128
Kamke 1907	✓	0.01	179	✓	0.059	66
Kamke 1908	✓	0.053	551	✓	0.703	3207
Kamke 1909	✓	0.058	1630	✓	28.134	33085
Kamke 1910	✓	0.01	39	✓	0.081	37
Kamke 1911	✗	0	0	✓	0.144	322
Kamke 1912	✗	0	0	✓	2.669	11400
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1913	✓	0.034	64	✓	0.136	54
Kamke 1914	✓	0.639	201	✓	0.356	92
Kamke 1915	✗	0	0	✓	12.	181
Kamke 1916	✗	0	0	✓	0.484	237
Kamke 1917	✗	0	0	✓	0.901	109
Kamke 1918	✗	0	0	✓	2.268	245
Kamke 1919	✗	0	0	✓	4.945	249
Kamke 1920	✗	0	0	✓	4.986	248
Kamke 1921	✗	0	0	✗	0	0
Kamke 1922	✗	0	0	✗	0	0
Kamke 1923	✓	0.012	53	✓	0.157	35
Kamke 1924	✓	0.071	191	✓	0.282	186
Kamke 1925	✗	0	0	✓	0.266	230
Kamke 1926	✗	0	0	✓	0.104	96
Kamke 1927	✗	0	0	✗	0	0
Kamke 1928	✗	0	0	✗	0	0
Kamke 1929	✗	0	0	✓	3.449	116
Kamke 1930	✓	0.051	308	✓	0.044	45
Kamke 1931	✓	5.513	10101	✓	0.627	944
Kamke 1932	✗	0	0	✓	1.089	393
Kamke 1933	✗	0	0	✓	2.302	17749
Kamke 1934	✗	0	0	✓	1.328	376
Kamke 1935	✗	0	0	✓	1.733	741
Kamke 1936	✗	0	0	✓	0.651	712
Kamke 1937	✗	0	0	✓	1.998	305
Kamke 1938	✓	0.01	137	✓	0.103	101
Kamke 1939	✗	0	0	✓	1.357	1121
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Table 3 – continued from previous page

#	Mathematica			Maple		
	solved	cpu	leaf	solved	cpu	leaf
Kamke 1940	X	0	0	X	0	0

2.1 ODE No. 1

$$y'(x) - \frac{1}{\sqrt{a_0 + a_1x + a_2x^2 + a_3x^3 + a_4x^4}} = 0$$

✓ **Mathematica** : cpu = 0.694575 (sec), leaf count = 1117

$$\left\{ \left\{ y(x) \rightarrow c_1 - \frac{2F\left(\sin^{-1}\left(\sqrt{\frac{(x - \text{Root}[a_4\#1^4 + a_3\#1^3 + a_2\#1^2 + a_1\#1 + a_0\&,1])}{(x - \text{Root}[a_4\#1^4 + a_3\#1^3 + a_2\#1^2 + a_1\#1 + a_0\&,2]) - \text{Root}[a_4\#1^4 + a_3\#1^3 + a_2\#1^2 + a_1\#1 + a_0\&,1]}}{(x - \text{Root}[a_4\#1^4 + a_3\#1^3 + a_2\#1^2 + a_1\#1 + a_0\&,2]) - \text{Root}[a_4\#1^4 + a_3\#1^3 + a_2\#1^2 + a_1\#1 + a_0\&,1]}}\right)}{\left(\text{RootOf}(a_4_Z^4 + a_3_Z^3 + a_2_Z^2 + a_1_Z + a_0, \text{index} = 4) - \text{RootOf}(a_4_Z^4 + a_3_Z^3 + a_2_Z^2 + a_1_Z + a_0, \text{index} = 1)\right)}\right. \right.$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 1089

$$\left\{ y(x) = 2 \frac{(-\text{RootOf}(a_4_Z^4 + a_3_Z^3 + a_2_Z^2 + a_1_Z + a_0, \text{index} = 4) - \text{RootOf}(a_4_Z^4 + a_3_Z^3 + a_2_Z^2 + a_1_Z + a_0, \text{index} = 1))}{(\text{RootOf}(a_4_Z^4 + a_3_Z^3 + a_2_Z^2 + a_1_Z + a_0, \text{index} = 4) - \text{RootOf}(a_4_Z^4 + a_3_Z^3 + a_2_Z^2 + a_1_Z + a_0, \text{index} = 1))} \right.$$

2.2 ODE No. 2

$$ay(x) + c(-e^{bx}) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0265868 (sec), leaf count = 34

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

✓ **Maple** : cpu = 0.013 (sec), leaf count = 25

$$\left\{ y(x) = \left(\frac{ce^{(a+b)x}}{a+b} + -C1 \right) e^{-ax} \right\}$$

2.3 ODE No. 3

$$ay(x) - b \sin(cx) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0484241 (sec), leaf count = 40

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

✓ **Maple** : cpu = 0.023 (sec), leaf count = 37

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

2.4 ODE No. 4

$$-e^{-x^2} x + y'(x) + 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0096568 (sec), leaf count = 30

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

✓ **Maple** : cpu = 0.007 (sec), leaf count = 18

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

2.5 ODE No. 5

$$y'(x) + y(x) \cos(x) - e^{2x} = 0$$

✓ **Mathematica** : cpu = 3.18143 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow e^{-\sin(x)} \int_1^x e^{2K[1] + \sin(K[1])} dK[1] + c_1 e^{-\sin(x)} \right\} \right\}$$

✓ **Maple** : cpu = 0.076 (sec), leaf count = 27

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

2.6 ODE No. 6

$$y'(x) + y(x) \cos(x) - \frac{1}{2} \sin(2x) = 0$$

✓ **Mathematica** : cpu = 0.0231265 (sec), leaf count = 18

$$\{ \{ y(x) \rightarrow c_1 e^{-\sin(x)} + \sin(x) - 1 \} \}$$

✓ **Maple** : cpu = 0.021 (sec), leaf count = 15

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

2.7 ODE No. 7

$$y'(x) + y(x) \cos(x) - e^{-\sin(x)} = 0$$

✓ **Mathematica** : cpu = 0.023404 (sec), leaf count = 23

$$\{ \{ y(x) \rightarrow c_1 e^{-\sin(x)} + x e^{-\sin(x)} \} \}$$

✓ **Maple** : cpu = 0.007 (sec), leaf count = 19

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

2.8 ODE No. 8

$$y'(x) + y(x) \tan(x) - \sin(2x) = 0$$

✓ **Mathematica** : cpu = 0.0245079 (sec), leaf count = 17

$$\{ \{ y(x) \rightarrow c_1 \cos(x) - 2 \cos^2(x) \} \}$$

✓ **Maple** : cpu = 0.013 (sec), leaf count = 15

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

2.9 ODE No. 9

$$y'(x) - y(x)(a + \sin(\log(x)) + \cos(\log(x))) = 0$$

✓ **Mathematica** : cpu = 0.0170532 (sec), leaf count = 19

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

✓ **Maple** : cpu = 0.01 (sec), leaf count = 16

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

2.10 ODE No. 10

$$y(x)f'(x) - f(x)f'(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.00916306 (sec), leaf count = 18

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

✓ **Maple** : cpu = 0.011 (sec), leaf count = 15

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

2.11 ODE No. 11

$$f(x)y(x) - g(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.471675 (sec), leaf count = 62

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

✓ **Maple** : cpu = 0.019 (sec), leaf count = 24

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

2.12 ODE No. 12

$$y'(x) + y(x)^2 - 1 = 0$$

✓ **Mathematica** : cpu = 0.0443363 (sec), leaf count = 34

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

✓ **Maple** : cpu = 0.033 (sec), leaf count = 8

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

2.13 ODE No. 13

$$-ax - b + y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0424254 (sec), leaf count = 79

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt[3]{ac_1} \text{Ai}'\left(\frac{b+ax}{a^{2/3}}\right) + \sqrt[3]{a} \text{Bi}'\left(\frac{b+ax}{a^{2/3}}\right)}{-c_1 \text{Ai}\left(\frac{b+ax}{a^{2/3}}\right) - \text{Bi}\left(\frac{b+ax}{a^{2/3}}\right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.147 (sec), leaf count = 79

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

2.14 ODE No. 14

$$ax^m + y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0297844 (sec), leaf count = 254

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

✓ **Maple** : cpu = 0.108 (sec), leaf count = 187

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

2.15 ODE No. 15

$$x^4 - 2x^2y(x) + y'(x) + y(x)^2 - 2x - 1 = 0$$

✓ **Mathematica** : cpu = 0.0205734 (sec), leaf count = 25

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

✓ **Maple** : cpu = 0.177 (sec), leaf count = 37

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

2.16 ODE No. 16

$$f(x)(xy(x) - 1) + y'(x) + y(x)^2 = 0$$

✗ **Mathematica** : cpu = 21.2663 (sec), leaf count = 0 , could not solve

`DSolve[y[x]^2 + f[x]*(-1 + x*y[x]) + Derivative[1][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.111 (sec), leaf count = 50

$$\left\{ y(x) = -1e^{\int -\frac{x^2 f(x)+2}{x} dx} \left(-C1 - \int e^{\int -\frac{x^2 f(x)+2}{x} dx} dx \right)^{-1} + x^{-1} \right\}$$

2.17 ODE No. 17

$$y'(x) - y(x)^2 - 3y(x) + 4 = 0$$

✓ **Mathematica** : cpu = 0.0240452 (sec), leaf count = 34

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

✓ **Maple** : cpu = 0.112 (sec), leaf count = 25

$$\left\{ y(x) = -\frac{4e^{5x} - C1 + 1}{-1 + e^{5x} - C1} \right\}$$

2.18 ODE No. 18

$$y'(x) - y(x)^2 - xy(x) - x + 1 = 0$$

✓ **Mathematica** : cpu = 0.0406162 (sec), leaf count = 50

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

✓ **Maple** : cpu = 0.078 (sec), leaf count = 47

$$\left\{ y(x) = -1 + \frac{1}{-C1 + \frac{i}{2}\sqrt{\pi}e^{-2}\sqrt{2}\operatorname{Erf}\left(\frac{i}{2}\sqrt{2}x - i\sqrt{2}\right)} e^{\frac{x^2}{2} - 2x} \right\}$$

2.19 ODE No. 19

$$y'(x) - (y(x) + x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0108231 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{c_1 e^{2ix} - \frac{i}{2}} - x - i \right\} \right\}$$

✓ **Maple** : cpu = 0.04 (sec), leaf count = 16

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

2.20 ODE No. 20

$$(x^2 + 1)y(x) + y'(x) - y(x)^2 - 2x = 0$$

✓ **Mathematica** : cpu = 0.773316 (sec), leaf count = 48

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

✓ **Maple** : cpu = 0.081 (sec), leaf count = 34

$$\left\{ y(x) = x^2 + 1 + 1e^{\frac{x^3}{3} + x} \left(-C1 - \int e^{\frac{x^3}{3} + x} dx \right)^{-1} \right\}$$

2.21 ODE No. 21

$$y'(x) - y(x)^2 + y(x) \sin(x) - \cos(x) = 0$$

✓ **Mathematica** : cpu = 6.52575 (sec), leaf count = 69

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

✓ **Maple** : cpu = 0.126 (sec), leaf count = 25

$$\left\{ y(x) = -\frac{e^{-\cos(x)}}{-C1 + \int e^{-\cos(x)} dx} + \sin(x) \right\}$$

2.22 ODE No. 22

$$y'(x) - y(x)^2 - y(x) \sin(2x) - \cos(2x) = 0$$

✗ **Mathematica** : cpu = 0 (sec), leaf count = 0 , crash

Kernel Crash

✓ **Maple** : cpu = 0.372 (sec), leaf count = 198

$$\left\{ y(x) = \left(2 \frac{-C1 \cos(2x)}{\sqrt{2} \cos(2x) + 2} \text{HeunCPrime} \left(1, 1/2, -1/2, -1, \frac{7}{8}, 1/2 \cos(2x) + 1/2 \right) \left(-C1 \text{HeunC} \left(1, \right. \right. \right.$$

2.23 ODE No. 23

$$ay(x)^2 - b + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0214786 (sec), leaf count = 43

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

✓ **Maple** : cpu = 0.039 (sec), leaf count = 29

$$\left\{ y(x) = \frac{1}{a} \tanh \left(-C1 \sqrt{ab} + x \sqrt{ab} \right) \sqrt{ab} \right\}$$

2.24 ODE No. 24

$$ay(x)^2 - bx^\nu + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0135686 (sec), leaf count = 277

$$\left\{ \left\{ y(x) \rightarrow - \frac{\sqrt{-a}\sqrt{bx}^{\frac{\nu+2}{2}} \left(c_1 J_{\frac{\nu+1}{\nu+2}} \left(\frac{2\sqrt{-a}\sqrt{bx}^{\frac{\nu+1}{2}}}{\nu+2} \right) - c_1 J_{-\frac{\nu+3}{\nu+2}} \left(\frac{2\sqrt{-a}\sqrt{bx}^{\frac{\nu+2}{2}}}{\nu+2} \right) - 2 J_{\frac{1}{\nu+2}-1} \left(\frac{2\sqrt{-a}\sqrt{bx}^{\frac{\nu+2}{2}}}{\nu+2} \right) \right)}{2ax \left(c_1 J_{-\frac{1}{\nu+2}} \left(\frac{2\sqrt{-a}\sqrt{bx}^{\frac{\nu+2}{2}}}{\nu+2} \right) + J_{\frac{1}{\nu+2}} \left(\frac{2\sqrt{-a}\sqrt{bx}^{\frac{\nu+2}{2}}}{\nu+2} \right) \right)} \right\} \right.$$

✓ **Maple** : cpu = 0.067 (sec), leaf count = 216

$$\left\{ y(x) = -\frac{1}{ax} \left(\sqrt{-abx}^{\frac{\nu}{2}+1} J_{\frac{3+\nu}{\nu+2}} \left(2 \frac{\sqrt{-abx}^{\nu/2+1}}{\nu+2} \right) - C1 + Y_{\frac{3+\nu}{\nu+2}} \left(2 \frac{\sqrt{-abx}^{\nu/2+1}}{\nu+2} \right) \sqrt{-abx}^{\frac{\nu}{2}+1} - C1 J_{(\nu+2)} \right) \right.$$

2.25 ODE No. 25

$$ay(x)^2 - bx^{2\nu} - cx^{\nu-1} + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.232857 (sec), leaf count = 1835

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

✓ **Maple** : cpu = 0.307 (sec), leaf count = 378

$$\left\{ y(x) = \frac{1}{2ax} \left(\left(2\sqrt{ax}^{\nu+1} - C1 b^2 - b^{\frac{3}{2}} - C1 \nu + \sqrt{a} - C1 bc \right) W_{-\frac{c}{2\nu+2}\sqrt{a}\frac{1}{\sqrt{b}}, \frac{1}{2\nu+2}} \left(2 \frac{\sqrt{a}\sqrt{bx}^{\nu+1}}{\nu+1} \right) + (-2b^3) \right) \right.$$

2.26 ODE No. 26

$$y'(x) - (Ay(x) - a)(By(x) - b) = 0$$

✓ **Mathematica** : cpu = 0.0770541 (sec), leaf count = 68

$$\left\{ \left\{ y(x) \rightarrow \frac{ae^{Abc_1+Abx} - be^{aBc_1+aBx}}{Ae^{Abc_1+Abx} - Be^{aBc_1+aBx}} \right\} \right\}$$

✓ **Maple** : cpu = 0.07 (sec), leaf count = 59

$$\left\{ y(x) = \frac{e^{A_C1 b+Abx-B_C1 a-Bax} a - b}{Ae^{A_C1 b+Abx-B_C1 a-Bax} - B} \right\}$$

2.27 ODE No. 27

$$ay(x)(y(x) - x) + y'(x) - 1 = 0$$

✓ **Mathematica** : cpu = 0.0452419 (sec), leaf count = 120

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

✓ **Maple** : cpu = 0.186 (sec), leaf count = 71

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

2.28 ODE No. 28

$$x^3(-y(x)) + y'(x) + xy(x)^2 - 2x = 0$$

✓ **Mathematica** : cpu = 0.0482776 (sec), leaf count = 96

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

✓ **Maple** : cpu = 0.086 (sec), leaf count = 67

$$\left\{ y(x) = 2 \frac{e^{-1/4x^4} - C1}{\sqrt{\pi} (\operatorname{Erf}(1/2x^2) - C1 + 1)} + \frac{1}{\sqrt{\pi}} \left(\operatorname{Erf}\left(\frac{x^2}{2}\right) \sqrt{\pi} - C1 x^2 + x^2 \sqrt{\pi} \right) \left(\operatorname{Erf}\left(\frac{x^2}{2}\right) - C1 + 1 \right)^{-1} \right\}$$

2.29 ODE No. 29

$$y'(x) - xy(x)^2 - 3xy(x) = 0$$

✓ **Mathematica** : cpu = 0.02218 (sec), leaf count = 39

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

✓ **Maple** : cpu = 0.013 (sec), leaf count = 19

$$\left\{ y(x) = 3 \left(-1 + 3e^{-3/2x^2} - C1 \right)^{-1} \right\}$$

2.30 ODE No. 30

$$x^{-a-1}y(x)^2 - x^a + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0657321 (sec), leaf count = 230

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

✓ **Maple** : cpu = 0.088 (sec), leaf count = 81

$$\left\{ y(x) = -C1 x^{a+1} K_{a+1}(2\sqrt{x}) \frac{1}{\sqrt{x}} (K_a(2\sqrt{x}) - C1 + I_a(2\sqrt{x}))^{-1} + x^{a+1} I_{a+1}(2\sqrt{x}) \frac{1}{\sqrt{x}} (K_a(2\sqrt{x}) - C1 + I_a(2\sqrt{x}))^{-1} \right\}$$

2.31 ODE No. 31

$$y'(x) - ax^n(y(x)^2 + 1) = 0$$

✓ **Mathematica** : cpu = 0.0298574 (sec), leaf count = 21

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

✓ **Maple** : cpu = 0.04 (sec), leaf count = 26

$$\left\{ y(x) = \tan \left(\frac{-C1 an + x^{n+1}a + -C1 a}{n+1} \right) \right\}$$

2.32 ODE No. 32

$$y'(x) + y(x)^2 \sin(x) - 2 \tan(x) \sec(x) = 0$$

✓ **Mathematica** : cpu = 0.142469 (sec), leaf count = 34

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

✓ **Maple** : cpu = 0.264 (sec), leaf count = 28

$$\left\{ y(x) = -2 \frac{(\cos(x))^3 - C1 + 1}{((\cos(x))^3 - C1 - 2) \cos(x)} \right\}$$

2.33 ODE No. 33

$$-\frac{y(x)^2 f'(x)}{g(x)} + \frac{g'(x)}{f(x)} + y'(x) = 0$$

✓ **Mathematica** : cpu = 27.0248 (sec), leaf count = 157

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

✓ **Maple** : cpu = 0.486 (sec), leaf count = 57

$$\left\{ y(x) = -\frac{1}{(f(x))^2} \left(g(x) f(x) \int \frac{\frac{d}{dx} f(x)}{g(x) (f(x))^2} dx + g(x) f(x) - C1 + 1 \right) \left(-C1 + \int \frac{\frac{d}{dx} f(x)}{g(x) (f(x))^2} dx \right) \right\}$$

2.34 ODE No. 34

$$f(x)y(x)^2 + g(x)y(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.510305 (sec), leaf count = 51

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

✓ **Maple** : cpu = 0.029 (sec), leaf count = 28

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

2.35 ODE No. 35

$$f(x) (2ay(x) + b + y(x)^2) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.057591 (sec), leaf count = 60

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

✓ **Maple** : cpu = 0.044 (sec), leaf count = 45

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

2.36 ODE No. 36

$$axy(x)^2 + y'(x) + y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.20994 (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 = 0.091 (sec), leaf count = 62

$$\left\{ y(x) = 2 \frac{a}{a^2 x^2 + 2 \operatorname{RootOf} \left(\sqrt[3]{-2 a^2} \operatorname{Bi}(-Z) - C1 x + \sqrt[3]{-2 a^2} x \operatorname{Ai}(-Z) + 2 \operatorname{Bi}^{(1)}(-Z) - C1 + 2 \operatorname{Ai}^{(1)}(-Z) \right)} \right.$$

2.37 ODE No. 37

$$-ae^x y(x)^2 + y'(x) - y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.667587 (sec), leaf count = 78

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

✓ **Maple** : cpu = 0.099 (sec), leaf count = 50

$$\left\{ -C1 + \frac{1}{e^x a} e^{-\frac{(e^x a + (y(x))^{-1})^2}{2}} + \frac{\sqrt{2}\sqrt{\pi}}{2} \operatorname{Erf} \left(\frac{(e^x a + (y(x))^{-1}) \sqrt{2}}{2} \right) = 0 \right\}$$

2.38 ODE No. 38

$$-ay(x)^3 - bx^{3/2} + y'(x) = 0$$

✗ **Mathematica** : cpu = 8.05454 (sec), leaf count = 0 , could not solve

`DSolve[-(b*x^(3/2)) - a*y[x]^3 + Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)-a*y(x)^3-b*x^(3/2) = 0,y(x))`

2.39 ODE No. 39

$$-a_0 - a_1 y(x) - a_2 y(x)^2 - a_3 y(x)^3 + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0363572 (sec), leaf count = 54

$$\operatorname{Solve} \left[\operatorname{RootSum} \left[\#1^3 a_3 + \#1^2 a_2 + \#1 a_1 + a_0 \&, \frac{\log(y(x) - \#1)}{3\#1^2 a_3 + 2\#1 a_2 + a_1} \& \right] = c_1 + x, y(x) \right]$$

✓ **Maple** : cpu = 0.014 (sec), leaf count = 30

$$\left\{ x - \int^{y(x)} (-a^3 a^3 + -a^2 a^2 + -a a^1 + a^0)^{-1} d_a + -C1 = 0 \right\}$$

2.40 ODE No. 40

$$3ay(x)^3 + 6axy(x)^2 + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.231988 (sec), leaf count = 185

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

✓ **Maple** : cpu = 0.072 (sec), leaf count = 48

$$\left\{ y(x) = \left(3ax^2 + \text{RootOf}\left(\text{Bi}(-Z)\sqrt[3]{-3a} - C1 x + \sqrt[3]{-3ax}\text{Ai}(-Z) + \text{Bi}^{(1)}(-Z) - C1 + \text{Ai}^{(1)}(-Z)\right) \sqrt[3]{-3} \right. \right.$$

2.41 ODE No. 41

$$axy(x)^3 + by(x)^2 + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0773069 (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 = 0.214 (sec), leaf count = 103

$$\left\{ y(x) = \frac{1}{x} e^{\text{RootOf}\left(2\sqrt{b^2+4ab}\text{Artanh}\left(\frac{2ae^{-Z}+b}{\sqrt{b^2+4a}}\right) - \ln(x^2(ae^{-Z}+be^{-Z}-1))\right) b^2 + 2 - C1 b^2 + 2 - Z b^2 - 4 \ln(x^2(ae^{-Z}+be^{-Z}-1)) a + 8 - C1}$$

2.42 ODE No. 42

$$y'(x) - x(x+2)y(x)^3 - (x+3)y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.920893 (sec), leaf count = 485

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

✓ **Maple** : cpu = 0.027 (sec), leaf count = 40

$$\left\{ -C1 + \text{Artanh}\left(x\sqrt{y(x)}\frac{1}{\sqrt{x(x+2)y(x)+2}}\right) + \frac{1}{2}\sqrt{x(x+2)y(x)+2}\frac{1}{\sqrt{y(x)}} = 0 \right\}$$

2.43 ODE No. 43

$$y(x)^3(4a^2x+3ax^2+b)+y'(x)+3xy(x)^2=0$$

✓ **Mathematica** : cpu = 8.39458 (sec), leaf count = 490

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

✓ **Maple** : cpu = 2.096 (sec), leaf count = 384

$$\left\{ -C1 + 1\left(-\left(\frac{1}{2}\sqrt{\frac{4a^3-3b}{a^3}}-\frac{2a+3x}{2a}\right)K_{\frac{1}{2}\sqrt{\frac{4a^3-3b}{a^3}+1}}\left(-\frac{\sqrt{3}}{2}\sqrt{\frac{4y(x)a^2x+3ax^2y(x)+by(x)-2a}{a^3y(x)}}\right)\right)$$

2.44 ODE No. 44

$$2ax^3y(x)^3 + y'(x) + 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0166958 (sec), leaf count = 72

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

✓ **Maple** : cpu = 0.023 (sec), leaf count = 53

$$\left\{ y(x) = -2 \frac{1}{\sqrt{-4ax^2 + 4e^{2x^2} - C1 - 2a}}, y(x) = 2 \frac{1}{\sqrt{-4ax^2 + 4e^{2x^2} - C1 - 2a}} \right\}$$

2.45 ODE No. 45

$$2y(x)^3 (a^2x^3 - b^2x) + 3by(x)^2 + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.509583 (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 = 0.12 (sec), leaf count = 123

$$\left\{ -C1 + 1 \sqrt[4]{\left(\frac{ax}{b} + \left(\frac{b^2y(x)}{a} - \frac{b}{ax}\right)^{-1}\right)^2 - 1} \left(\frac{b^2y(x)}{a} - \frac{b}{ax}\right)^{-1} \frac{1}{\sqrt{\frac{ax}{b} + \left(\frac{b^2y(x)}{a} - \frac{b}{ax}\right)^{-1}}} - \int^{\frac{ax^2y(x)}{bxy(x)-1}} 1 \sqrt[4]{\dots} \right\}$$

2.46 ODE No. 46

$$-x^{-a}y(x) + ax^{-a-1} - x^{-2a} - x^a y(x)^3 + y'(x) + 3y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.245496 (sec), leaf count = 258

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

✓ **Maple** : cpu = 0.129 (sec), leaf count = 1052

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

2.47 ODE No. 47

$$-a(x^n - x)y(x)^3 + y'(x) - y(x)^2 = 0$$

✗ **Mathematica** : cpu = 32.8662 (sec), leaf count = 0 , could not solve

`DSolve[-y[x]^2 - a*(-x + x^n)*y[x]^3 + Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)-a*(x^n-x)*y(x)^3-y(x)^2 = 0,y(x))`

2.48 ODE No. 48

$$y(x)^3(-ax^n + bx) - cy(x)^2 + y'(x) = 0$$

✗ **Mathematica** : cpu = 36.2752 (sec), leaf count = 0 , could not solve

`DSolve[-(c*y[x]^2) - (b*x + a*x^n)*y[x]^3 + Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)-(a*x^n+b*x)*y(x)^3-c*y(x)^2 = 0,y(x))`

2.49 ODE No. 49

$$ay(x)^3\phi'(x) + \frac{(2a+1)y(x)\phi''(x)}{\phi'(x)} + 6a\phi(x)y(x)^2 + 2a + y'(x) + 2 = 0$$

✗ **Mathematica** : cpu = 28.7126 (sec), leaf count = 0 , could not solve

DSolve[2 + 2*a + 6*a*phi[x]*y[x]^2 + a*y[x]^3*Derivative[1][phi][x] + Derivative[1][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(diff(y(x),x)+a*diff(phi(x),x)*y(x)^3+6*a*phi(x)*y(x)^2+(2*a+1)*y(x)*diff(phi(x),x)+2=0,y(x))

2.50 ODE No. 50

$$-f_0(x) - f_1(x)y(x) - f_2(x)y(x)^2 - f_3(x)y(x)^3 + y'(x) = 0$$

✗ **Mathematica** : cpu = 129.325 (sec), leaf count = 0 , could not solve

DSolve[-f0[x] - f1[x]*y[x] - f2[x]*y[x]^2 - f3[x]*y[x]^3 + Derivative[1][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(diff(y(x),x)-f3(x)*y(x)^3-f2(x)*y(x)^2-f1(x)*y(x)-f0(x) = 0,y(x))

2.51 ODE No. 51

$$-h(x)(y(x)-f(x))(y(x)-g(x)) \left(y(x) - \frac{af(x)+bg(x)}{a+b} \right) - \frac{f'(x)(y(x)-g(x))}{f(x)-g(x)} - \frac{(y(x)-f(x))g'(x)}{g(x)-f(x)} + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.742014 (sec), leaf count = 354

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

✓ **Maple** : cpu = 0.221 (sec), leaf count = 2348

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

2.52 ODE No. 52

$$-ay(x)^n - bx^{\frac{n}{1-n}} + y'(x) = 0$$

✓ **Mathematica** : cpu = 143.361 (sec), leaf count = 115

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{ax - \frac{n}{1-n}}{b} \right)^{\frac{1}{n}} \frac{1}{-K[1] \left(\frac{(-1)^n(n-1)^{-n}b^{1-n}}{a} \right)^{\frac{1}{n}} + K[1]^n + 1} dK[1] = \int_1^x bK[2]^{\frac{n}{1-n}} \left(\frac{aK[2]^{-\frac{n}{1-n}}}{b} \right)^{\frac{1}{n}} dK[2] \right]$$

✓ **Maple** : cpu = 0.211 (sec), leaf count = 61

$$\left\{ - \int_{-b}^{y(x)} 1x^{\frac{n}{n-1}} \left((ax(n-1) - a^n + a)x^{\frac{n}{n-1}} + b(n-1)x \right)^{-1} d_a(n-1) + \ln(x) - C1 = 0 \right\}$$

2.53 ODE No. 53

$$f(x)^{1-n}g'(x)y(x)^n (-ag(x) + b)^{-n} - \frac{y(x)f'(x)}{f(x)} - f(x)g'(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 79.2084 (sec), leaf count = 95

$$\text{Solve} \left[\int_1^{y(x)(f(x)^{-n}(ag(x)+b)^{-n})^{\frac{1}{n}}} \frac{1}{-(a^n)^{\frac{1}{n}} K[1] + K[1]^n + 1} dK[1] = \frac{f(x)(ag(x) + b) \log(ag(x) + b) (f(x)^{-n})^{\frac{1}{n}}}{a} \right]$$

✓ **Maple** : cpu = 0.063 (sec), leaf count = 281

$$\left\{ y(x) = \frac{(ag(x) + b) f(x)}{a} \text{RootOf} \left(- \int^{-Z} \frac{1}{-a ((ag(x) + b)^{-n} (f(x))^{1-n} \frac{d}{dx}g(x))^{-n-1} (f(x) \frac{d}{dx}g(x))^{-2n}} dZ \right) \right\}$$

2.54 ODE No. 54

$$-a^n f(x)^{1-n} g'(x) y(x)^n - \frac{y(x) f'(x)}{f(x)} - f(x) g'(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.117056 (sec), leaf count = 74

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

✓ **Maple** : cpu = 0.174 (sec), leaf count = 42

$$\left\{ -C1 + \frac{y(x)}{f(x)} {}_2F_1(1, n^{-1}; \frac{n+1}{n}; - \left(\frac{ay(x)}{f(x)} \right)^n) - g(x) = 0 \right\}$$

2.55 ODE No. 55

$$-f(x)y(x)^n - g(x)y(x) - h(x) + y'(x) = 0$$

✗ **Mathematica** : cpu = 4.04916 (sec), leaf count = 0 , could not solve

`DSolve[-h[x] - g[x]*y[x] - f[x]*y[x]^n + Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)-f(x)*y(x)^n-g(x)*y(x)-h(x) = 0,y(x))`

2.56 ODE No. 56

$$-f(x)y(x)^a - g(x)y(x)^b + y'(x) = 0$$

✗ **Mathematica** : cpu = 2.28584 (sec), leaf count = 0 , could not solve

`DSolve[-(f[x]*y[x]^a) - g[x]*y[x]^b + Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)-f(x)*y(x)^a-g(x)*y(x)^b = 0,y(x))`

2.57 ODE No. 57

$$y'(x) - \sqrt{|y(x)|} = 0$$

✓ **Mathematica** : cpu = 96.7353 (sec), leaf count = 283

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

✓ **Maple** : cpu = 0.109 (sec), leaf count = 31

$$\left\{ x - \begin{cases} -2 \sqrt{-y(x)} & y(x) \leq 0 \\ 2 \sqrt{y(x)} & 0 < y(x) \end{cases} + C1 = 0 \right\}$$

2.58 ODE No. 58

$$a(-\sqrt{y(x)}) - bx + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.154954 (sec), leaf count = 119

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

✓ **Maple** : cpu = 0.076 (sec), leaf count = 68

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

2.59 ODE No. 59

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

✓ **Mathematica** : cpu = 0.180019 (sec), leaf count = 96

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

✓ **Maple** : cpu = 0.052 (sec), leaf count = 26

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

2.60 ODE No. 60

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

✓ **Mathematica** : cpu = 0.0498775 (sec), leaf count = 55

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

✓ **Maple** : cpu = 0.017 (sec), leaf count = 29

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

2.61 ODE No. 61

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

✓ **Mathematica** : cpu = 0.176027 (sec), leaf count = 75

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

✓ **Maple** : cpu = 0.014 (sec), leaf count = 50

$$\left\{ -C1 + x\sqrt{x^2 - 1} - \ln \left(x + \sqrt{x^2 - 1} \right) - y(x) \sqrt{(y(x))^2 - 1} + \ln \left(y(x) + \sqrt{(y(x))^2 - 1} \right) = 0 \right\}$$

2.62 ODE No. 62

$$y'(x) - \frac{y(x) - x^2 \sqrt{x^2 - y(x)^2}}{xy(x) \sqrt{x^2 - y(x)^2} + x} = 0$$

✓ **Mathematica** : cpu = 3.75953 (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 = 0.406 (sec), leaf count = 34

$$\left\{ \frac{(y(x))^2}{2} + \arctan \left(y(x) \frac{1}{\sqrt{x^2 - (y(x))^2}} \right) + \frac{x^2}{2} - C1 = 0 \right\}$$

2.63 ODE No. 63

$$y'(x) - \frac{y(x)^2 + 1}{(x + 1)^{3/2} |y(x) + \sqrt{y(x) + 1}|} = 0$$

✗ **Mathematica** : cpu = 300.006 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.135 (sec), leaf count = 35

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

2.64 ODE No. 64

$$y'(x) - \sqrt{\frac{ay(x)^2 + by(x) + c}{ax^2 + bx + c}} = 0$$

✓ **Mathematica** : cpu = 0.174964 (sec), leaf count = 269

$$\left\{ \left\{ y(x) \rightarrow \frac{e^{-\sqrt{ac_1}} (8a^{3/2} ce^{2\sqrt{ac_1}} \sqrt{ax^2 + bx + c} - 8a^{3/2} c \sqrt{ax^2 + bx + c} + 8a^2 c x e^{2\sqrt{ac_1}} + 8a^2 c x + 2b^3 e^{\sqrt{ac_1}})}{\dots} \right. \right.$$

✓ **Maple** : cpu = 0.084 (sec), leaf count = 124

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

2.65 ODE No. 65

$$y'(x) - \sqrt{\frac{y(x)^3 + 1}{x^3 + 1}} = 0$$

✓ **Mathematica** : cpu = 1.49432 (sec), leaf count = 312

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

✓ **Maple** : cpu = 0.046 (sec), leaf count = 47

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

2.66 ODE No. 66

$$y'(x) - \frac{\sqrt{|(1-y(x))y(x)(1-ay(x))|}}{\sqrt{|(1-x)x(1-ax)|}} = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.077 (sec), leaf count = 139

$$\left\{ -2 \frac{\sqrt{-ax+1}\sqrt{ax}}{a\sqrt{asignum(x(x-1)(ax-1))x^3-x^2asignum(x(x-1)(ax-1))-signum(x(x-1)(ax-1))}} \right\}$$

2.67 ODE No. 67

$$y'(x) - \frac{\sqrt{1-y(x)^4}}{\sqrt{1-x^4}} = 0$$

✓ **Mathematica** : cpu = 0.131653 (sec), leaf count = 14

$$\{\{y(x) \rightarrow \text{sn}(c_1 + F(\sin^{-1}(x)|-1)|-1)\}\}$$

✓ **Maple** : cpu = 0.015 (sec), leaf count = 51

$$\left\{ \text{EllipticF}(x, i) \sqrt{-x^2+1} \sqrt{x^2+1} \frac{1}{\sqrt{-x^4+1}} - \int^{y(x)} \frac{1}{\sqrt{-a^4+1}} d_a + _C1 = 0 \right\}$$

2.68 ODE No. 68

$$y'(x) - \sqrt{\frac{ay(x)^4 + by(x)^2 + 1}{ax^4 + bx^2 + 1}} = 0$$

✓ **Mathematica** : cpu = 1.02788 (sec), leaf count = 373

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

✓ **Maple** : cpu = 0.059 (sec), leaf count = 77

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

2.69 ODE No. 69

$$y'(x) - \sqrt{(a_0 + a_1 x + a_2 x^2 + a_3 x^3 + a_4 x^4) (b_0 + b_1 y(x) + b_2 y(x)^2 + b_3 y(x)^3 + b_4 y(x)^4)} = 0$$

✓ **Mathematica** : cpu = 50.284 (sec), leaf count = 12750

too large to display

✓ **Maple** : cpu = 0.154 (sec), leaf count = 111

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{-a^4 b_4 + -a^3 b_3 + -a^2 b_2 + -a b_1 + b_0}} d_a + \int^x -1 \sqrt{(b_4 (y(x))^4 + b_3 (y(x))^3 + b_2 (y(x))^2 + b_1 (y(x)) + b_0)} \dots \right.$$

2.70 ODE No. 70

$$y'(x) - \sqrt{\frac{a_0 + a_1x + a_2x^2 + a_3x^3 + a_4x^4}{b_0 + b_1y(x) + b_2y(x)^2 + b_3y(x)^3 + b_4y(x)^4}} = 0$$

✓ **Mathematica** : cpu = 147.173 (sec), leaf count = 23353

too large to display

✓ **Maple** : cpu = 0.165 (sec), leaf count = 113

$$\left\{ \int^{y(x)} \sqrt{-a^4b_4 + -a^3b_3 + -a^2b_2 + -ab_1 + b_0} d_a + \int^x -\sqrt{\frac{-a^4a_4 + -a^3a_3 + -a^2a_2 + -aa_1}{b_4 (y(x))^4 + b_3 (y(x))^3 + b_2 (y(x))^2 + b_1 (y(x)) + b_0}} dx \right.$$

2.71 ODE No. 71

$$y'(x) - \sqrt{\frac{b_0 + b_1y(x) + b_2y(x)^2 + b_3y(x)^3 + b_4y(x)^4}{a_0 + a_1x + a_2x^2 + a_3x^3 + a_4x^4}} = 0$$

✓ **Mathematica** : cpu = 2.3337 (sec), leaf count = 2237

$$\text{Solve} \left[\frac{2F \left(\sin^{-1} \left(\sqrt{\frac{(\text{Root}[b_4\#1^4 + b_3\#1^3 + b_2\#1^2 + b_1\#1 + b_0\&, 2] - \text{Root}[b_4\#1^4 + b_3\#1^3 + b_2\#1^2 + b_1\#1 + b_0\&, 4]) (y(x) - \text{Root}[b_4\#1^4 + b_3\#1^3 + b_2\#1^2 + b_1\#1 + b_0\&, 1])}{(\text{Root}[b_4\#1^4 + b_3\#1^3 + b_2\#1^2 + b_1\#1 + b_0\&, 1] - \text{Root}[b_4\#1^4 + b_3\#1^3 + b_2\#1^2 + b_1\#1 + b_0\&, 4]) (y(x) - \text{Root}[b_4\#1^4 + b_3\#1^3 + b_2\#1^2 + b_1\#1 + b_0\&, 1])} \right)}{\dots} \right]$$

✓ **Maple** : cpu = 0.126 (sec), leaf count = 113

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{-a^4b_4 + -a^3b_3 + -a^2b_2 + -ab_1 + b_0}} d_a + \int^x -1 \sqrt{\frac{b_4 (y(x))^4 + b_3 (y(x))^3 + b_2 (y(x))^2 + b_1 (y(x)) + b_0}{-a^4a_4 + -a^3a_3 + -a^2a_2 + -aa_1}} dx \right.$$

2.72 ODE No. 72

$$y'(x) - R1\left(x, \sqrt{a_0 + a_1x + a_2x^2 + a_3x^3 + a_4x^4}\right) R2\left(y(x), \sqrt{b_0 + b_1y(x) + b_2y(x)^2 + b_3y(x)^3 + b_4y(x)^4}\right)$$

✓ **Mathematica** : cpu = 0.814962 (sec), leaf count = 87

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\int_1^{\#1} \frac{1}{R2\left(K[1], \sqrt{b_1K[1] + b_2K[1]^2 + b_3K[1]^3 + b_4K[1]^4 + b_0}\right)} dK[1] \& \right] \right. \right.$$

✓ **Maple** : cpu = 0.013 (sec), leaf count = 64

$$\left\{ \int R1\left(x, \sqrt{a_4x^4 + a_3x^3 + a_2x^2 + a_1x + a_0}\right) dx - \int^{y(x)} \left(R2\left(-a, \sqrt{-a^4b_4 + -a^3b_3 + -a^2b_2 + -a^1b_1 + a_0}\right) \right) dy \right.$$

2.73 ODE No. 73

$$y'(x) - \left(\frac{a_0 + a_1x + a_2x^2 + a_3x^3}{a_0 + a_1y(x) + a_2y(x)^2 + a_3y(x)^3} \right)^{2/3} = 0$$

✓ **Mathematica** : cpu = 1.00903 (sec), leaf count = 733

$$\text{Solve} \left[\frac{3(a_0 + y(x)(a_1 + y(x)(a_2 + a_3y(x))))^{2/3} (y(x) - \text{Root}[\#1^3a_3 + \#1^2a_2 + \#1a_1 + a_0\&, 1]) F_1\left(\frac{5}{3}; -\right)}{5 \left(\frac{y(x) - \text{Root}[\#1^3a_3 + \#1^2a_2 + \#1a_1 + a_0\&, 2]}{\text{Root}[\#1^3a_3 + \#1^2a_2 + \#1a_1 + a_0\&, 1]} - \text{Root}[\#1^3a_3 + \#1^2a_2 + \#1a_1 + a_0\&, 1]} \right)} \right]$$

✓ **Maple** : cpu = 0.277 (sec), leaf count = 91

$$\left\{ \int^{y(x)} (-a^3a_3 + -a^2a_2 + -a a_1 + a_0)^{2/3} d_a + \int^x - \left(\frac{-a^3a_3 + -a^2a_2 + -a a_1 + a_0}{a_3 (y(x))^3 + a_2 (y(x))^2 + a_1 y(x) + a_0} \right)^{2/3} (a_3 y(x)^3 + a_2 y(x)^2 + a_1 y(x) + a_0) dy \right.$$

2.74 ODE No. 74

$$y'(x) - f(x)(y(x) - g(x))\sqrt{(y(x) - a)(y(x) - b)} = 0$$

✗ **Mathematica** : cpu = 2.93368 (sec), leaf count = 0 , could not solve

`DSolve[-(f[x]*Sqrt[(-a + y[x])*(-b + y[x])]*(-g[x] + y[x])) + Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)-f(x)*(y(x)-g(x))*((y(x)-a)*(y(x)-b))^(1/2) = 0,y(x))`

2.75 ODE No. 75

$$y'(x) - e^{x-y(x)} + e^x = 0$$

✓ **Mathematica** : cpu = 0.0407967 (sec), leaf count = 18

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

✓ **Maple** : cpu = 0.135 (sec), leaf count = 20

$$\{y(x) = -e^x + \ln(-1 + e^{e^x + C_1}) - C_1\}$$

2.76 ODE No. 76

$$-a \cos(y(x)) + b + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.15046 (sec), leaf count = 116

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

✓ **Maple** : cpu = 0.049 (sec), leaf count = 54

$$\left\{ y(x) = 2 \arctan \left(\frac{\tanh \left(\frac{1}{2} C_1 \sqrt{a^2 - b^2} + \frac{1}{2} x \sqrt{a^2 - b^2} \right) \sqrt{a^2 - b^2}}{a + b} \right) \right\}$$

2.77 ODE No. 77

$$y'(x) - \cos(ay(x) + bx) = 0$$

✓ **Mathematica** : cpu = 0.308356 (sec), leaf count = 124

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

✓ **Maple** : cpu = 0.075 (sec), leaf count = 65

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

2.78 ODE No. 78

$$a \sin(\alpha y(x) + \beta x) + b + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.832808 (sec), leaf count = 1317

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

✓ **Maple** : cpu = 1.056 (sec), leaf count = 118

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

2.79 ODE No. 79

$$f(x) \cos(ay(x)) + g(x) \sin(ay(x)) + h(x) + y'(x) = 0$$

✗ **Mathematica** : cpu = 25.2095 (sec), leaf count = 0 , could not solve

`DSolve[Cos[a*y[x]]*f[x] + h[x] + g[x]*Sin[a*y[x]] + Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)+f(x)*cos(a*y(x))+g(x)*sin(a*y(x))+h(x) = 0,y(x))`

2.80 ODE No. 80

$$(1 - f'(x)) \cos(y(x)) - f'(x) + f(x) \sin(y(x)) + y'(x) - 1 = 0$$

✗ **Mathematica** : cpu = 23.7266 (sec), leaf count = 0 , could not solve

`DSolve[-1 + f[x]*Sin[y[x]] + Cos[y[x]]*(1 - Derivative[1][f][x]) - Derivative[1][f][x]`

✓ **Maple** : cpu = 1.49 (sec), leaf count = 41

$$\left\{ y(x) = 2 \arctan \left(\frac{-e^{\int f(x) dx} + \int e^{\int f(x) dx} dx f(x) + C_1 f(x)}{-C_1 + \int e^{\int f(x) dx} dx} \right) \right\}$$

2.81 ODE No. 81

$$y'(x) + 2 \tan(x) \tan(y(x)) - 1 = 0$$

✗ **Mathematica** : cpu = 43.2416 (sec), leaf count = 0 , could not solve

`DSolve[-1 + 2*Tan[x]*Tan[y[x]] + Derivative[1][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 1.296 (sec), leaf count = 78

$$\left\{ -C_1 + \tan(x) \frac{1}{\sqrt[4]{\frac{(1+(\tan(y(x)))^2)(1+(\tan(x))^2)}{(\tan(y(x))\tan(x)-1)^2}}} + \frac{\tan(y(x)) + \tan(x)}{2 \tan(y(x)) \tan(x) - 2^2} {}_2F_1\left(\frac{1}{2}, \frac{5}{4}; \frac{3}{2}; -\frac{(\tan(y(x)) + \tan(x))}{(\tan(y(x)) \tan(x) - 1)}\right) \right\}$$

2.82 ODE No. 82

$$-a(\tan^2(y(x)) + 1) + y'(x) + \tan(x) \tan(y(x)) = 0$$

✗ **Mathematica** : cpu = 49.6954 (sec), leaf count = 0 , could not solve

`DSolve[Tan[x]*Tan[y[x]] - a*(1 + Tan[y[x]]^2) + Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)-a*(1+tan(y(x))^2)+tan(y(x))*tan(x) = 0,y(x))`

2.83 ODE No. 83

$$y'(x) - \tan(xy(x)) = 0$$

✗ **Mathematica** : cpu = 40.3772 (sec), leaf count = 0 , could not solve

`DSolve[-Tan[x*y[x]] + Derivative[1][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.443 (sec), leaf count = 44

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

2.84 ODE No. 84

$$y'(x) - f(ax + by(x)) = 0$$

✓ **Mathematica** : cpu = 8.49839 (sec), leaf count = 244

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

✓ **Maple** : cpu = 0.04 (sec), leaf count = 37

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

2.85 ODE No. 85

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

✓ **Mathematica** : cpu = 155.644 (sec), leaf count = 235

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

✓ **Maple** : cpu = 0.461 (sec), leaf count = 153

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

2.86 ODE No. 86

$$y'(x) - \frac{y(x) - xf(ay(x)^2 + x^2)}{ay(x)f(ay(x)^2 + x^2) + x} = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.444 (sec), leaf count = 52

$$\left\{ 1 \arctan \left(x\sqrt{a} \frac{1}{\sqrt{a^2(y(x))^2}} \right) \frac{1}{\sqrt{a}} - \frac{1}{2} \int^{(y(x))^2 + \frac{x^2}{a}} \frac{f(-aa)}{-a} d_a - C1 = 0 \right\}$$

2.87 ODE No. 87

$$y'(x) - \frac{cx^ay(x)^b + ay(x)f(x^cy(x))}{bxf(x^cy(x)) - x^ay(x)^b} = 0$$

✗ **Mathematica** : cpu = 15.2404 (sec), leaf count = 0 , could not solve

DSolve[-((a*f[x^c*y[x]]*y[x] + c*x^a*y[x]^b)/(b*x*f[x^c*y[x]] - x^a*y[x]^b)) + Derivat

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(diff(y(x),x)-(y(x)*a*f(x^c*y(x))+c*x^a*y(x)^b)/(x*b*f(x^c*y(x))-x^a*y(x)^b) = 0

2.88 ODE No. 88

$$-ce^{-2ax} - 4ay(x) - b + 2y'(x) - 3y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.280286 (sec), leaf count = 2831

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

✓ **Maple** : cpu = 0.226 (sec), leaf count = 420

$$\left\{ y(x) = \left(-\frac{\sqrt{3}C1}{3} \sqrt{c} Y_{-\frac{1}{2a}}(\sqrt{4a^2-3b-2a^2}) \left(\frac{\sqrt{3}e^{-ax}}{2a} \sqrt{c} \right) \left(Y_{-\frac{1}{2a}}(\sqrt{4a^2-3b-2a^2}) \left(\frac{\sqrt{3}e^{-ax}}{2a} \sqrt{c} \right) - C1 + J_{-\frac{1}{2a}}(\sqrt{4a^2-3b-2a^2}) \right) \right) \right.$$

2.89 ODE No. 89

$$xy'(x) - \sqrt{a^2 - x^2} = 0$$

✓ **Mathematica** : cpu = 0.0323603 (sec), leaf count = 48

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

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

$$\left\{ y(x) = \sqrt{a^2 - x^2} - a^2 \ln \left(\frac{1}{x} \left(2a^2 + 2\sqrt{a^2}\sqrt{a^2 - x^2} \right) \right) \frac{1}{\sqrt{a^2}} + C1 \right\}$$

2.90 ODE No. 90

$$xy'(x) + y(x) - x \sin(x) = 0$$

✓ **Mathematica** : cpu = 0.0141151 (sec), leaf count = 24

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

✓ **Maple** : cpu = 0.013 (sec), leaf count = 17

$$\left\{ y(x) = \frac{\sin(x) - \cos(x)x + C1}{x} \right\}$$

2.91 ODE No. 91

$$xy'(x) - y(x) - \frac{x}{\log(x)} = 0$$

✓ **Mathematica** : cpu = 0.00664063 (sec), leaf count = 15

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

✓ **Maple** : cpu = 0.007 (sec), leaf count = 11

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

2.92 ODE No. 92

$$x^2(-\sin(x)) + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0122205 (sec), leaf count = 15

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

✓ **Maple** : cpu = 0.007 (sec), leaf count = 13

$$\{y(x) = -\cos(x)x + x_C1\}$$

2.93 ODE No. 93

$$xy'(x) - y(x) - \frac{x \cos(\log(\log(x)))}{\log(x)} = 0$$

✓ **Mathematica** : cpu = 0.0198342 (sec), leaf count = 16

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

✓ **Maple** : cpu = 0.015 (sec), leaf count = 14

$$\{y(x) = x \sin(\ln(\ln(x))) + x_C1\}$$

2.94 ODE No. 94

$$ay(x) + bx^n + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0152821 (sec), leaf count = 25

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{-a} - \frac{bx^n}{a+n} \right\} \right\}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 23

$$\left\{ y(x) = -\frac{bx^n}{n+a} + x^{-a} - C1 \right\}$$

2.95 ODE No. 95

$$x^2 + xy'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0154936 (sec), leaf count = 32

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

✓ **Maple** : cpu = 0.073 (sec), leaf count = 40

$$\left\{ y(x) = -\frac{-C1 x Y_1(x)}{-C1 Y_0(x) + J_0(x)} - \frac{J_1(x)x}{-C1 Y_0(x) + J_0(x)} \right\}$$

2.96 ODE No. 96

$$xy'(x) - y(x)^2 + 1 = 0$$

✓ **Mathematica** : cpu = 0.022348 (sec), leaf count = 33

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

✓ **Maple** : cpu = 0.033 (sec), leaf count = 11

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

2.97 ODE No. 97

$$ay(x)^2 + bx^2 + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0258995 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{bx} \tan(\sqrt{a}\sqrt{bx} - \sqrt{a}\sqrt{bc_1})}{\sqrt{a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 31

$$\left\{ y(x) = -\frac{x}{a} \tan(-C1 \sqrt{ab} + x\sqrt{ab}) \sqrt{ab} \right\}$$

2.98 ODE No. 98

$$ay(x)^2 + cx^{2b} - by(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0250506 (sec), leaf count = 442

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{-a}\sqrt{-cx^b} \left(\frac{\sqrt{\frac{2}{\pi}} c_1 \sin\left(\frac{\sqrt{-a}\sqrt{-cx^b}}{b}\right)}{\sqrt{\frac{\sqrt{-a}\sqrt{-cx^b}}{b}}} - \frac{2\sqrt{\frac{2}{\pi}} \cos\left(\frac{\sqrt{-a}\sqrt{-cx^b}}{b}\right)}{\sqrt{\frac{\sqrt{-a}\sqrt{-cx^b}}{b}}} - \frac{\sqrt{\frac{2}{\pi}} c_1 \left(-\sin\left(\frac{\sqrt{-a}\sqrt{-cx^b}}{b}\right) - \frac{\sqrt{-ab}\sqrt{-cx^{-b}} \cos\left(\frac{\sqrt{-a}\sqrt{-cx^b}}{b}\right)}{ac} \right)}{\sqrt{\frac{\sqrt{-a}\sqrt{-cx^b}}{b}}} \right)}{2a \left(\frac{\sqrt{\frac{2}{\pi}} \sin\left(\frac{\sqrt{-a}\sqrt{-cx^b}}{b}\right)}{\sqrt{\frac{\sqrt{-a}\sqrt{-cx^b}}{b}}} + \frac{\sqrt{\frac{2}{\pi}} c_1 \cos\left(\frac{\sqrt{-a}\sqrt{-cx^b}}{b}\right)}{\sqrt{\frac{\sqrt{-a}\sqrt{-cx^b}}{b}}} \right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.052 (sec), leaf count = 38

$$\left\{ y(x) = -\frac{1}{x^{-b}} \tan\left(\frac{1}{b}(x^b \sqrt{a}\sqrt{c} + -C1 b)\right) \sqrt{c} \frac{1}{\sqrt{a}} \right\}$$

2.99 ODE No. 99

$$ay(x)^2 - by(x) - cx^\beta + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0178548 (sec), leaf count = 244

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{-a}\sqrt{cx^{\beta/2}} \left(-2J_{\frac{b}{\beta}-1} \left(\frac{2\sqrt{-a}\sqrt{cx^{\beta/2}}}{\beta} \right) + c_1 J_{1-\frac{b}{\beta}} \left(\frac{2\sqrt{-a}\sqrt{cx^{\beta/2}}}{\beta} \right) - c_1 J_{-\frac{b+\beta}{\beta}} \left(\frac{2\sqrt{-a}\sqrt{cx^{\beta/2}}}{\beta} \right) \right) - bc_1 J_{\frac{b}{\beta}} \left(\frac{2\sqrt{-a}\sqrt{cx^{\beta/2}}}{\beta} \right)}{2a \left(J_{\frac{b}{\beta}} \left(\frac{2\sqrt{-a}\sqrt{cx^{\beta/2}}}{\beta} \right) + c_1 J_{-\frac{b}{\beta}} \left(\frac{2\sqrt{-a}\sqrt{cx^{\beta/2}}}{\beta} \right) \right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.115 (sec), leaf count = 237

$$\left\{ y(x) = -\frac{C1}{a} \sqrt{-acx^{\frac{\beta}{2}}} Y_{\frac{b+\beta}{\beta}} \left(2 \frac{\sqrt{-acx^{\beta/2}}}{\beta} \right) \left(Y_{\frac{b}{\beta}} \left(2 \frac{\sqrt{-acx^{\beta/2}}}{\beta} \right) - C1 + J_{\frac{b}{\beta}} \left(2 \frac{\sqrt{-acx^{\beta/2}}}{\beta} \right) \right)^{-1} - \frac{1}{a} \left(J_{\frac{b}{\beta}} \left(2 \frac{\sqrt{-acx^{\beta/2}}}{\beta} \right) \right) \right\}$$

2.100 ODE No. 100

$$a + xy'(x) + xy(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.00874196 (sec), leaf count = 157

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

✓ **Maple** : cpu = 0.083 (sec), leaf count = 59

$$\left\{ y(x) = 1\sqrt{a} (J_0(2\sqrt{a}\sqrt{x}) - C1 + Y_0(2\sqrt{a}\sqrt{x})) \frac{1}{\sqrt{x}} (-C1 J_1(2\sqrt{a}\sqrt{x}) + Y_1(2\sqrt{a}\sqrt{x}))^{-1} \right\}$$

2.101 ODE No. 101

$$xy'(x) + xy(x)^2 - y(x) = 0$$

✓ **Mathematica** : cpu = 0.00911059 (sec), leaf count = 18

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

✓ **Maple** : cpu = 0.013 (sec), leaf count = 16

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

2.102 ODE No. 102

$$-ax^3 + xy'(x) + xy(x)^2 - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0199251 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow \sqrt{ax} \tanh \left(\frac{1}{2} (2\sqrt{ac_1} + \sqrt{ax^2}) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.039 (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

$$-x^3 - (2x^2 + 1) y(x) + xy'(x) + xy(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0973967 (sec), leaf count = 90

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

✓ **Maple** : cpu = 0.034 (sec), leaf count = 29

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

2.104 ODE No. 104

$$axy(x)^2 + bx + xy'(x) + 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0164696 (sec), leaf count = 43

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

✓ **Maple** : cpu = 0.072 (sec), leaf count = 63

$$\left\{ y(x) = -\frac{1}{a} \left(-\frac{1}{x} \left(i\sqrt{a}\sqrt{bx} - 1 \right) + 1e^{-2ix\sqrt{a}\sqrt{b}} \left(-C1 - \frac{i}{2} e^{-2ix\sqrt{a}\sqrt{b}} \frac{1}{\sqrt{a}} \frac{1}{\sqrt{b}} \right)^{-1} \right) \right\}$$

2.105 ODE No. 105

$$axy(x)^2 + by(x) + cx + d + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.18468 (sec), leaf count = 473

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 \left(i\sqrt{a}e^{-i\sqrt{a}\sqrt{cx}} (b(-\sqrt{c}) - i\sqrt{ad}) U \left(1 - \frac{-\sqrt{cb} - i\sqrt{ad}}{2\sqrt{c}}, b + 1, 2i\sqrt{a}\sqrt{cx} \right) - i\sqrt{a}\sqrt{c}e^{-i\sqrt{a}\sqrt{cx}} U \left(-\frac{-\sqrt{cb} - i\sqrt{ad}}{2\sqrt{c}} \right)}{a \left(c_1 e^{-i\sqrt{a}\sqrt{cx}} U \left(-\frac{-\sqrt{cb} - i\sqrt{ad}}{2\sqrt{c}} \right) \right)} \right. \right.$$

✓ **Maple** : cpu = 0.322 (sec), leaf count = 844

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

2.106 ODE No. 106

$$\frac{1}{2}(a - b)y(x) + x^ay(x)^2 + x^b + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0383798 (sec), leaf count = 40

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

✓ **Maple** : cpu = 0.044 (sec), leaf count = 42

$$\left\{ y(x) = -1 \tan \left(\frac{1}{a+b} (-C1a + -C1b + 2x^{a/2+b/2}) \right) \left(x^{\frac{a}{2} - \frac{b}{2}} \right)^{-1} \right\}$$

2.107 ODE No. 107

$$ax^\alpha y(x)^2 + by(x) - cx^\beta + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.261949 (sec), leaf count = 1415

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

✓ **Maple** : cpu = 0.234 (sec), leaf count = 176

$$\left\{ y(x) = -\frac{x^{1-\alpha}}{ax} \left(Y_{\frac{b+\beta}{\alpha+\beta}} \left(2 \frac{\sqrt{-ac} x^{\alpha/2+\beta/2}}{\alpha + \beta} \right) - C1 + J_{\frac{b+\beta}{\alpha+\beta}} \left(2 \frac{\sqrt{-ac} x^{\alpha/2+\beta/2}}{\alpha + \beta} \right) \right) x^{\frac{\alpha}{2} + \frac{\beta}{2}} \sqrt{-ac} \left(Y_{-\frac{\alpha-b}{\alpha+\beta}} \left(2 \frac{\sqrt{-ac} x^{\alpha/2+\beta/2}}{\alpha + \beta} \right) \right) \right.$$

2.108 ODE No. 108

$$xy'(x) + y(x) + y(x)^2(-\log(x)) = 0$$

✓ **Mathematica** : cpu = 0.0112538 (sec), leaf count = 15

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{c_1 x + \log(x) + 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.013 (sec), leaf count = 13

$$\{y(x) = (1 + C1 x + \ln(x))^{-1}\}$$

2.109 ODE No. 109

$$xy'(x) - y(x)(2y(x)\log(x) - 1) = 0$$

✓ **Mathematica** : cpu = 0.0113514 (sec), leaf count = 17

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{c_1 x + 2 \log(x) + 2} \right\} \right\}$$

✓ **Maple** : cpu = 0.014 (sec), leaf count = 15

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

2.110 ODE No. 110

$$f(x) (y(x)^2 - x^2) + xy'(x) = 0$$

✗ **Mathematica** : cpu = 16.4241 (sec), leaf count = 0 , could not solve

DSolve[f[x]*(-x^2 + y[x]^2) + x*Derivative[1][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(x*diff(y(x),x)+f(x)*(y(x)^2-x^2) = 0,y(x))

2.111 ODE No. 111

$$xy'(x) + y(x)^3 + 3xy(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.281741 (sec), leaf count = 55

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

✓ **Maple** : cpu = 0.128 (sec), leaf count = 54

$$\left\{ -C1 - \frac{i}{3} e^{\frac{(3xy(x)-1)^2}{2(y(x))^2}} + \frac{\sqrt{\pi}\sqrt{2}}{2} \operatorname{Erf} \left(\frac{(-i + 3iy(x)x)\sqrt{2}}{2y(x)} \right) = 0 \right\}$$

2.112 ODE No. 112

$$-\sqrt{x^2 + y(x)^2} + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.021301 (sec), leaf count = 13

$$\{\{y(x) \rightarrow x \sinh(c_1 + \log(x))\}\}$$

✓ **Maple** : cpu = 0.038 (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

$$a\sqrt{x^2 + y(x)^2} + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0228081 (sec), leaf count = 16

$$\{\{y(x) \rightarrow x \sinh(c_1 - a \log(x))\}\}$$

✓ **Maple** : cpu = 0.029 (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

$$-x\sqrt{x^2 + y(x)^2} + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0202169 (sec), leaf count = 12

$$\{\{y(x) \rightarrow x \sinh(c_1 + x)\}\}$$

✓ **Maple** : cpu = 1.938 (sec), leaf count = 28

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

2.115 ODE No. 115

$$-x(y(x) - x)\sqrt{x^2 + y(x)^2} + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.120952 (sec), leaf count = 99

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

✓ **Maple** : cpu = 0.223 (sec), leaf count = 49

$$\left\{ \ln \left(2 \frac{x \left(\sqrt{2} (y(x))^2 + 2x^2 + y(x) + x \right)}{y(x) - x} \right) + \frac{\sqrt{2}x^2}{2} - \ln(x) - C_1 = 0 \right\}$$

2.116 ODE No. 116

$$-x\sqrt{(y(x)^2 - 4x^2)(y(x)^2 - x^2)} + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.433175 (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 = 0.216 (sec), leaf count = 151

$$\left\{ \int_{-b}^x 1 \left(-a \sqrt{4 - a^4 - 5 - a^2 (y(x))^2 + (y(x))^4} + y(x) \right) \frac{1}{\sqrt{4 - a^4 - 5 - a^2 (y(x))^2 + (y(x))^4}} d_a + \int^{y(x)} \dots \right\}$$

2.117 ODE No. 117

$$xy'(x) + x\left(-e^{\frac{y(x)}{x}}\right) - y(x) - x = 0$$

✓ **Mathematica** : cpu = 0.025904 (sec), leaf count = 21

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

✓ **Maple** : cpu = 0.102 (sec), leaf count = 20

$$\left\{ y(x) = \left(\ln \left(-\frac{x}{-1 + xe^{-C_1}} \right) + -C_1 \right) x \right\}$$

2.118 ODE No. 118

$$xy'(x) - y(x) \log(y(x)) = 0$$

✓ **Mathematica** : cpu = 0.0113748 (sec), leaf count = 13

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

✓ **Maple** : cpu = 0.048 (sec), leaf count = 8

$$\left\{ y(x) = e^{-C_1 x} \right\}$$

2.119 ODE No. 119

$$xy'(x) - y(x)(\log(xy(x)) - 1) = 0$$

✓ **Mathematica** : cpu = 0.0290523 (sec), leaf count = 17

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

✓ **Maple** : cpu = 0.058 (sec), leaf count = 14

$$\left\{ y(x) = \frac{1}{x} e^{-\frac{x}{C_1}} \right\}$$

2.120 ODE No. 120

$$xy'(x) - y(x) \left(x \log \left(\frac{x^2}{y(x)} \right) + 2 \right) = 0$$

✓ **Mathematica** : cpu = 0.050666 (sec), leaf count = 20

$$\left\{ \left\{ y(x) \rightarrow x^2 e^{-2c_1 e^{-x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.165 (sec), leaf count = 17

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

2.121 ODE No. 121

$$xy'(x) - \sin(x - y(x)) = 0$$

✗ **Mathematica** : cpu = 3.02103 (sec), leaf count = 0 , could not solve
`DSolve[-Sin[x - y[x]] + x*Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve
`dsolve(x*diff(y(x),x)-sin(x-y(x)) = 0,y(x))`

2.122 ODE No. 122

$$\cos(y(x)) (\sin(y(x)) - 3x^2 \cos(y(x))) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0711753 (sec), leaf count = 21

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

✓ **Maple** : cpu = 0.456 (sec), leaf count = 16

$$\left\{ y(x) = \arctan \left(\frac{x^3 + 2 - C1}{x} \right) \right\}$$

2.123 ODE No. 123

$$xy'(x) - y(x) - x \sin\left(\frac{y(x)}{x}\right) = 0$$

✓ **Mathematica** : cpu = 0.0574595 (sec), leaf count = 19

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

✓ **Maple** : cpu = 0.049 (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

$$xy'(x) - y(x) + x \cos\left(\frac{y(x)}{x}\right) + x = 0$$

✓ **Mathematica** : cpu = 0.0274473 (sec), leaf count = 16

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

✓ **Maple** : cpu = 0.03 (sec), leaf count = 12

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

2.125 ODE No. 125

$$xy'(x) - y(x) + x \tan\left(\frac{y(x)}{x}\right) = 0$$

✓ **Mathematica** : cpu = 0.0376503 (sec), leaf count = 16

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

✓ **Maple** : cpu = 0.057 (sec), leaf count = 14

$$\left\{ y(x) = \arcsin\left(\frac{1}{-C1 x}\right) x \right\}$$

2.126 ODE No. 126

$$xy'(x) - y(x)f(xy(x)) = 0$$

✓ **Mathematica** : cpu = 14.7868 (sec), leaf count = 112

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

✓ **Maple** : cpu = 0.023 (sec), leaf count = 29

$$\left\{ y(x) = \frac{1}{x} \text{RootOf} \left(-\ln(x) + _C1 + \int^{-Z} \frac{1}{_a (1 + f(_a))} d_a \right) \right\}$$

2.127 ODE No. 127

$$xy'(x) - y(x)f(x^a y(x)^b) = 0$$

✗ **Mathematica** : cpu = 299.999 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.109 (sec), leaf count = 39

$$\left\{ \int_{-b}^{y(x)} \frac{1}{_a (f(x^a _a^b) b + a)} d_a - \frac{\ln(x)}{b} - _C1 = 0 \right\}$$

2.128 ODE No. 128

$$-f(x)g(x^a y(x)) + ay(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 4.2919 (sec), leaf count = 39

$$\text{Solve} \left[\int_1^{x^a y(x)} \frac{1}{g(K[1])} dK[1] = \int_1^x K[2]^{a-1} f(K[2]) dK[2] + c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.273 (sec), leaf count = 33

$$\left\{ y(x) = \frac{\text{RootOf} \left(-\int f(x) x^{a-1} dx + \int^{-Z} (g(_a))^{-1} d_a + _C1 \right)}{x^a} \right\}$$

2.129 ODE No. 129

$$(x + 1)y'(x) + y(x)(y(x) - x) = 0$$

✓ **Mathematica** : cpu = 0.0282808 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow -\frac{e^{x+1}}{-ec_1x - ec_1 - x\text{Ei}(x+1) - \text{Ei}(x+1) + e^{x+1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.031 (sec), leaf count = 41

$$\left\{ y(x) = -\frac{e^x}{e^{-1}\text{Ei}(1, -1-x)x + e^{-1}\text{Ei}(1, -1-x) - _C1x + e^x - _C1} \right\}$$

2.130 ODE No. 130

$$-2x^3 + 2xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0067859 (sec), leaf count = 21

$$\left\{ \left\{ y(x) \rightarrow c_1\sqrt{x} + \frac{2x^3}{5} \right\} \right\}$$

✓ **Maple** : cpu = 0.009 (sec), leaf count = 15

$$\left\{ y(x) = \frac{2x^3}{5} + \sqrt{x}_C1 \right\}$$

2.131 ODE No. 131

$$(2x + 1)y'(x) - 4e^{-y(x)} + 2 = 0$$

✓ **Mathematica** : cpu = 0.0175505 (sec), leaf count = 20

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

✓ **Maple** : cpu = 0.175 (sec), leaf count = 34

$$\left\{ y(x) = -\ln\left(\frac{2x+1}{-1+4xe^{2-C1}+2e^{2-C1}}\right) - 2_C1 \right\}$$

2.132 ODE No. 132

$$3xy'(x) - y(x) - 3xy(x)^4 \log(x) = 0$$

✓ **Mathematica** : cpu = 0.0119546 (sec), leaf count = 115

$$\left\{ \left\{ y(x) \rightarrow \frac{(-2)^{2/3} \sqrt[3]{x}}{\sqrt[3]{4c_1 + 3x^2 - 6x^2 \log(x)}} \right\}, \left\{ y(x) \rightarrow \frac{2^{2/3} \sqrt[3]{x}}{\sqrt[3]{4c_1 + 3x^2 - 6x^2 \log(x)}} \right\}, \left\{ y(x) \rightarrow -\frac{\sqrt[3]{-12^2}}{\sqrt[3]{4c_1 + 3x^2 - 6x^2 \log(x)}} \right\} \right\}$$

✓ **Maple** : cpu = 0.029 (sec), leaf count = 234

$$\left\{ y(x) = \frac{1}{6x^2 \ln(x) - 3x^2 - 4_C1} \sqrt[3]{-4x(6x^2 \ln(x) - 3x^2 - 4_C1)^2}, y(x) = -\frac{1}{12x^2 \ln(x) - 6x^2 - 8_C1} \right\}$$

2.133 ODE No. 133

$$x^2 y'(x) + y(x) - x = 0$$

✓ **Mathematica** : cpu = 0.00724252 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{x}} - e^{\frac{1}{x}} \text{Ei}\left(-\frac{1}{x}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 16

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

2.134 ODE No. 134

$$x^2 y'(x) + e^{x-\frac{1}{x}} x^2 - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0111719 (sec), leaf count = 27

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

✓ **Maple** : cpu = 0.009 (sec), leaf count = 17

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

2.135 ODE No. 135

$$x^2 y'(x) - (x - 1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.00693117 (sec), leaf count = 14

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{x} x} \right\} \right\}$$

✓ **Maple** : cpu = 0.007 (sec), leaf count = 11

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

2.136 ODE No. 136

$$x^2 y'(x) + x^2 + xy(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0125373 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow \frac{-c_1 x - x + x \log(x)}{c_1 - \log(x)} \right\} \right\}$$

✓ **Maple** : cpu = 0.019 (sec), leaf count = 18

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

2.137 ODE No. 137

$$x^2 y'(x) - xy(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0087746 (sec), leaf count = 16

$$\left\{ \left\{ y(x) \rightarrow \frac{x}{c_1 - \log(x)} \right\} \right\}$$

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

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

2.138 ODE No. 138

$$x^2 y'(x) - x^2 - xy(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0138268 (sec), leaf count = 13

$$\{ \{ y(x) \rightarrow x \tan(c_1 + \log(x)) \} \}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 11

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

2.139 ODE No. 139

$$ax^k - (b-1)b + x^2(y'(x) + y(x)^2) = 0$$

✓ **Mathematica** : cpu = 0.129531 (sec), leaf count = 821

$$\left\{ \left\{ y(x) \rightarrow - \frac{a^{\frac{b}{k} + \frac{1}{2}(\frac{1}{k} - \frac{2b}{k})} \left(\frac{b}{k} + \frac{1}{2}\left(\frac{1}{k} - \frac{2b}{k}\right)\right) x^{k-1} (x^k)^{\frac{b}{k} + \frac{1}{2}(\frac{1}{k} - \frac{2b}{k}) - 1} J_{\frac{2b-1}{k}}\left(\frac{2\sqrt{a}\sqrt{x^k}}{k}\right) \Gamma\left(\frac{2b}{k} - \frac{1}{k} + 1\right) k^{1-\frac{1}{k}} + \frac{1}{2}a}{\dots} \right\} \right\}$$

✓ **Maple** : cpu = 0.139 (sec), leaf count = 296

$$\left\{ y(x) = -\frac{C1}{x} \sqrt{ax^{\frac{k}{2}}} Y_{\frac{1}{k}}(\sqrt{(-1+2b)^2+k}) \left(2 \frac{\sqrt{ax^{k/2}}}{k}\right) \left(Y_{\frac{1}{k}}(\sqrt{(-1+2b)^2}) \left(2 \frac{\sqrt{ax^{k/2}}}{k}\right) - C1 + J_{\frac{1}{k}}(\sqrt{(-1+2b)^2}) \left(2 \frac{\sqrt{ax^{k/2}}}{k}\right)\right) \right\}$$

2.140 ODE No. 140

$$x^2(y'(x) + y(x)^2) + 4xy(x) + 2 = 0$$

✓ **Mathematica** : cpu = 0.0100129 (sec), leaf count = 17

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

✓ **Maple** : cpu = 0.046 (sec), leaf count = 23

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

2.141 ODE No. 141

$$axy(x) + b + x^2(y'(x) + y(x)^2) = 0$$

✓ **Mathematica** : cpu = 0.0268143 (sec), leaf count = 67

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{a^2 - 2a - 4b + 1} \left(\frac{2c_1}{x\sqrt{a^2 - 2a - 4b + 1} + c_1} - 1 \right) - 1}{2x} - \frac{a}{2x} \right\} \right\}$$

✓ **Maple** : cpu = 0.053 (sec), leaf count = 64

$$\left\{ y(x) = \frac{1}{2x} \left(-\tanh \left(-\frac{\ln(x)}{2} \sqrt{a^2 - 2a - 4b + 1} + \frac{C1}{2} \sqrt{a^2 - 2a - 4b + 1} \right) \sqrt{a^2 - 2a - 4b + 1} - a \right) \right\}$$

2.142 ODE No. 142

$$-ax^2y(x) + ax + x^2(y'(x) - y(x)^2) + 2 = 0$$

✓ **Mathematica** : cpu = 0.187412 (sec), leaf count = 113

$$\left\{ \left\{ y(x) \rightarrow -\frac{\frac{1}{a^3x^2} + c_1 \left(\frac{e^{ax}(a^2x + a(ax-2))}{x} - \frac{e^{ax}(ax(ax-2)+2)}{x^2} + \frac{ae^{ax}(ax(ax-2)+2)}{x} \right)}{\frac{c_1e^{ax}(ax(ax-2)+2)}{x} - \frac{1}{a^3x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.091 (sec), leaf count = 61

$$\left\{ y(x) = -\frac{(a^3x^3 - a^2x^2 + 2ax - 2)e^{ax} - C1}{x((a^2x^2 - 2ax + 2)e^{ax} + C1)} \right\}$$

2.143 ODE No. 143

$$x^2(ay(x)^2 + y'(x)) - b = 0$$

✓ **Mathematica** : cpu = 0.00966512 (sec), leaf count = 51

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{4ab + 1} \left(\frac{2c_1}{x\sqrt{4ab + 1} + c_1} - 1 \right) - 1}{2ax} \right\} \right\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 49

$$\left\{ y(x) = \frac{1}{2ax} \left(-\tanh \left(-\frac{\ln(x)}{2} \sqrt{4ab+1} + \frac{C1}{2} \sqrt{4ab+1} \right) \sqrt{4ab+1} + 1 \right) \right\}$$

2.144 ODE No. 144

$$x^2(ay(x)^2 + y'(x)) + bx^\alpha + c = 0$$

✓ **Mathematica** : cpu = 0.170646 (sec), leaf count = 1787

$$\left\{ \left\{ y(x) \rightarrow \frac{a \frac{i\sqrt{4ac-1}\alpha+\alpha-\sqrt{\alpha^2-4a\alpha^2c}}{2\alpha^2} - \frac{i\sqrt{4ac-1}\alpha+\alpha+\sqrt{\alpha^2-4a\alpha^2c}}{2\alpha^2} \alpha - \frac{i\sqrt{4ac-1}\alpha+\alpha-\sqrt{\alpha^2-4a\alpha^2c}}{\alpha^2} + \frac{\sqrt{\alpha^2-4a\alpha^2c}}{\alpha^2} + 1}{b \frac{i\sqrt{4ac-1}\alpha+\alpha-\sqrt{\alpha^2-4a\alpha^2c}}{2\alpha^2} - \frac{\sqrt{\alpha^2-4a\alpha^2c}}{2\alpha^2}} \left(\frac{i\sqrt{4ac-1}\alpha+\alpha-\sqrt{\alpha^2-4a\alpha^2c}}{2\alpha^2} - \frac{\sqrt{\alpha^2-4a\alpha^2c}}{2\alpha^2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.109 (sec), leaf count = 244

$$\left\{ y(x) = -\frac{1}{2ax} \left((-\sqrt{-4ac+1}C1 - C1) Y_{\frac{1}{\alpha}\sqrt{-4ac+1}} \left(2 \frac{\sqrt{abx^{\alpha/2}}}{\alpha} \right) + 2x^{\alpha/2} Y_{\frac{\sqrt{-4ac+1}}{\alpha}} \left(2 \frac{\sqrt{abx^{\alpha/2}}}{\alpha} \right) \right) \right\}$$

2.145 ODE No. 145

$$-ax^2y(x)^2 + ay(x)^3 + x^2y'(x) = 0$$

✓ **Mathematica** : cpu = 0.385099 (sec), leaf count = 267

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

✓ **Maple** : cpu = 0.118 (sec), leaf count = 117

$$\left\{ y(x) = -\left(ax + (-2a)^{\frac{2}{3}} \text{RootOf} \left(\text{Bi} \left(\frac{1}{x} (-Z^2 \sqrt[3]{-2ax} - 1) \frac{1}{\sqrt[3]{-2a}} \right) - C1 - Z + \text{Bi}^{(1)} \left(\frac{1}{x} (-Z^2 \sqrt[3]{-2ax} - 1) \frac{1}{\sqrt[3]{-2a}} \right) \right) \right)^{\frac{3}{2}}$$

2.146 ODE No. 146

$$ay(x)^2 + x^2y'(x) + xy(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.502943 (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 = 0.17 (sec), leaf count = 82

$$\left\{ -C1 + \left(x + \frac{a\sqrt{\pi}\sqrt{2}}{2} \text{Erf} \left(\frac{\sqrt{2}(ay(x) + x)}{2xy(x)} \right) e^{\frac{(ay(x)+x)^2}{2x^2(y(x))^2}} \right) e^{-\frac{((a-x)y(x)+x)((x+a)y(x)+x)}{2x^2(y(x))^2}} = 0 \right\}$$

2.147 ODE No. 147

$$ax^2y(x)^3 + by(x)^2 + x^2y'(x) = 0$$

✓ **Mathematica** : cpu = 0.509744 (sec), leaf count = 343

$$\text{Solve} \left[\frac{\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{ax}} + \frac{1}{2^{2/3}\sqrt[3]{a}\sqrt[3]{by(x)}} \right) \text{Ai} \left(\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{ax}} + \frac{1}{2^{2/3}\sqrt[3]{ay(x)}\sqrt[3]{b}} \right)^2 - \frac{\sqrt[3]{ax}}{\sqrt[3]{2b^{2/3}}} \right) + \text{Ai}' \left(\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{ax}} + \frac{1}{2^{2/3}\sqrt[3]{ay(x)}\sqrt[3]{b}} \right)}{\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{ax}} + \frac{1}{2^{2/3}\sqrt[3]{a}\sqrt[3]{by(x)}} \right) \text{Bi} \left(\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{ax}} + \frac{1}{2^{2/3}\sqrt[3]{ay(x)}\sqrt[3]{b}} \right)^2 - \frac{\sqrt[3]{ax}}{\sqrt[3]{2b^{2/3}}} \right) + \text{Bi}' \left(\left(\frac{b^{2/3}}{2^{2/3}\sqrt[3]{ax}} + \frac{1}{2^{2/3}\sqrt[3]{ay(x)}\sqrt[3]{b}} \right)} \right]$$

✓ **Maple** : cpu = 0.202 (sec), leaf count = 178

$$\left\{ y(x) = -\sqrt[3]{2}abx \left(\sqrt[3]{2}ab^2 - 2(a^2b^2)^{2/3} \text{RootOf} \left(\text{Bi} \left(-1/2 \frac{a2^{2/3}x - 2_Z^2\sqrt[3]{a^2b^2}}{\sqrt[3]{a^2b^2}} \right) - C1_Z + _Z \text{Ai} \left(- \right) \right) \right.$$

2.148 ODE No. 148

$$(x^2 + 1) y'(x) + xy(x) - 1 = 0$$

✓ **Mathematica** : cpu = 0.012441 (sec), leaf count = 30

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

✓ **Maple** : cpu = 0.01 (sec), leaf count = 16

$$\left\{ y(x) = (\text{Arcsinh}(x) + _C1) \frac{1}{\sqrt{x^2 + 1}} \right\}$$

2.149 ODE No. 149

$$(x^2 + 1) y'(x) - x(x^2 + 1) + xy(x) = 0$$

✓ **Mathematica** : cpu = 0.011945 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{\sqrt{x^2 + 1}} + \frac{1}{3}(x^2 + 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.01 (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

$$(x^2 + 1) y'(x) - 2x^2 + 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.00836086 (sec), leaf count = 30

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

✓ **Maple** : cpu = 0.007 (sec), leaf count = 19

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

2.151 ODE No. 151

$$(x^2 + 1) y'(x) + (2xy(x) - 1) (y(x)^2 + 1) = 0$$

✓ **Mathematica** : cpu = 0.425383 (sec), leaf count = 203

$$\text{Solve} \left[c_1 = \frac{\frac{1}{2} \left(\frac{1}{\frac{ix}{x^2+1} - \frac{ix^2 y(x)}{x^2+1}} + \frac{i}{x} \right) \sqrt[4]{1 - \left(\frac{1}{\frac{ix}{x^2+1} - \frac{ix^2 y(x)}{x^2+1}} + \frac{i}{x} \right)^2} {}_2F_1 \left(\frac{1}{2}, \frac{5}{4}; \frac{3}{2}; \left(\frac{1}{\frac{ix}{x^2+1} - \frac{ix^2 y(x)}{x^2+1}} + \frac{i}{x} \right)^2 \right) + ix}{\sqrt[4]{-1 + \left(\frac{1}{\frac{ix}{x^2+1} - \frac{ix^2 y(x)}{x^2+1}} + \frac{i}{x} \right)^2}}, y(x) \right.$$

✓ **Maple** : cpu = 0.057 (sec), leaf count = 85

$$\left\{ -C1 + x \frac{1}{\sqrt[4]{\left(x^{-1} + x^2 \left(\frac{y(x)x^4}{x^2+1} - \frac{x^3}{x^2+1} \right)^{-1} \right)^2} + 1} + \frac{y(x) + x}{2xy(x) - 2} {}_2F_1 \left(\frac{1}{2}, \frac{5}{4}; \frac{3}{2}; -\frac{(y(x) + x)^2}{(xy(x) - 1)^2} \right) = 0 \right\}$$

2.152 ODE No. 152

$$(x^2 + 1) y'(x) - x(x^2 + 1) \cos^2(y(x)) + x \sin(y(x)) \cos(y(x)) = 0$$

✓ **Mathematica** : cpu = 0.231516 (sec), leaf count = 40

$$\left\{ \left\{ y(x) \rightarrow \tan^{-1} \left(\frac{-6c_1 \sqrt{x^2 + 1} + x^4 + 2x^2 + 1}{3(x^2 + 1)} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.782 (sec), leaf count = 25

$$\left\{ y(x) = \arctan \left(\frac{1}{3} \left((x^2 + 1)^{\frac{3}{2}} + 3 - C1 \right) \frac{1}{\sqrt{x^2 + 1}} \right) \right\}$$

2.153 ODE No. 153

$$a + (x^2 - 1) y'(x) - xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0165502 (sec), leaf count = 21

$$\left\{ \left\{ y(x) \rightarrow ax + c_1 \sqrt{x^2 - 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.017 (sec), leaf count = 20

$$\left\{ y(x) = \sqrt{1+x} \sqrt{x-1} _C1 + ax \right\}$$

2.154 ODE No. 154

$$(x^2 - 1) y'(x) + 2xy(x) - \cos(x) = 0$$

✓ **Mathematica** : cpu = 0.0138128 (sec), leaf count = 26

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

✓ **Maple** : cpu = 0.012 (sec), leaf count = 16

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

2.155 ODE No. 155

$$(x^2 - 1) y'(x) + y(x)^2 - 2xy(x) + 1 = 0$$

✓ **Mathematica** : cpu = 0.0173374 (sec), leaf count = 46

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

✓ **Maple** : cpu = 0.114 (sec), leaf count = 14

$$\{y(x) = x + (_C1 - \text{Artanh}(x))^{-1}\}$$

2.156 ODE No. 156

$$(x^2 - 1) y'(x) - y(x)(y(x) - x) = 0$$

✓ **Mathematica** : cpu = 0.015124 (sec), leaf count = 21

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

✓ **Maple** : cpu = 0.017 (sec), leaf count = 20

$$\left\{ y(x) = \left(\sqrt{x-1} \sqrt{1+x} C1 + x \right)^{-1} \right\}$$

2.157 ODE No. 157

$$a(y(x)^2 - 2xy(x) + 1) + (x^2 - 1) y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0858136 (sec), leaf count = 158

$$\left\{ \left\{ y(x) \rightarrow \frac{(x^2 - 1) \left(c_1 \left(ax(x^2 - 1)^{\frac{a}{2}-1} P_{a-1}(x) + (x^2 - 1)^{\frac{a}{2}-1} (aP_a(x) - axP_{a-1}(x)) \right) + ax(x^2 - 1)^{\frac{a}{2}-1} \right)}{a \left(c_1 (x^2 - 1)^{a/2} P_{a-1}(x) + (x^2 - 1)^{a/2} Q_{a-1}(x) \right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.266 (sec), leaf count = 231

$$\left\{ y(x) = \frac{1}{4a(1+x)} \left(8 C1 (1+x) ((a-1/2)x - a/2 + 1/2) HeunC(0, -2a+1, 0, 0, a^2 - a + 1/2, 2(1+x)) \right) \right\}$$

2.158 ODE No. 158

$$axy(x)^2 + (x^2 - 1) y'(x) + xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0348744 (sec), leaf count = 31

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

✓ **Maple** : cpu = 0.017 (sec), leaf count = 22

$$\left\{ y(x) = \left(\sqrt{x-1} \sqrt{1+x} C1 - a \right)^{-1} \right\}$$

2.159 ODE No. 159

$$(x^2 - 1) y'(x) - 2xy(x) \log(y(x)) = 0$$

✓ **Mathematica** : cpu = 0.0168616 (sec), leaf count = 22

$$\left\{ \left\{ y(x) \rightarrow e^{e^{c_1} x^2 - e^{c_1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.102 (sec), leaf count = 13

$$\{y(x) = e^{-C1(x-1)(1+x)}\}$$

2.160 ODE No. 160

$$(x^2 - 4) y'(x) + (x + 2)y(x)^2 - 4y(x) = 0$$

✓ **Mathematica** : cpu = 0.0197485 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow \frac{2 - x}{(x + 2)(c_1 - \log(x + 2))} \right\} \right\}$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 29

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

2.161 ODE No. 161

$$(x^2 - 5x + 6) y'(x) + x^2 + 3xy(x) - 8y(x) = 0$$

✓ **Mathematica** : cpu = 0.014046 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{(2 - x)^2(3 - x)} + \frac{\frac{x^4}{4} - \frac{2x^3}{3}}{(2 - x)^2(3 - x)} \right\} \right\}$$

✓ **Maple** : cpu = 0.017 (sec), leaf count = 27

$$\left\{ y(x) = \frac{1}{(x - 3)(x - 2)^2} \left(-\frac{x^4}{4} + \frac{2x^3}{3} + _C1 \right) \right\}$$

2.162 ODE No. 162

$$k(-a + y(x) + x)(-b + y(x) + x) + (x - a)(x - b)y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.260412 (sec), leaf count = 133

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \sqrt{\frac{-a^2 k^2 + 2abk^2 - b^2 k^2}{(k+1)^2}} \tan \left(\frac{(k+1) \sqrt{\frac{-a^2 k^2 + 2abk^2 - b^2 k^2}{(k+1)^2}} (\log(x-b) - \log(x-a))}{2(a-b)} + c_1 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.194 (sec), leaf count = 128

$$\left\{ y(x) = \frac{k}{k+1} \left(\frac{-C1 (a-x)^k a}{-C1 (a-x)^k + (b-x)^k} - \frac{-C1 (a-x)^k x}{-C1 (a-x)^k + (b-x)^k} + \frac{(b-x)^k b}{-C1 (a-x)^k + (b-x)^k} - \dots \right) \right\}$$

2.163 ODE No. 163

$$2a^2 x + 2x^2 y'(x) - 2y(x)^2 - xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0128419 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{-a^2} \sqrt{x} \tan \left(\frac{2\sqrt{-a^2}}{\sqrt{x}} - c_1 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.036 (sec), leaf count = 26

$$\left\{ y(x) = i \tan \left(1(-C1 \sqrt{x} - 2ia) \frac{1}{\sqrt{x}} \right) \sqrt{xa} \right\}$$

2.164 ODE No. 164

$$2a^2 x + 2x^2 y'(x) - 2y(x)^2 - 3xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0798587 (sec), leaf count = 131

$$\left\{ \left\{ y(x) \rightarrow \frac{x^2 \left(c_1 \left(\frac{ae^{-\frac{2a}{\sqrt{x}}}}{x} + \frac{e^{-\frac{2a}{\sqrt{x}}}}{2\sqrt{x}} \right) - \frac{e^{\frac{2a}{\sqrt{x}}}}{4a\sqrt{x}} + \frac{e^{\frac{2a}{\sqrt{x}}}}{2x} \right)}{c_1 \sqrt{x} e^{-\frac{2a}{\sqrt{x}}} - \frac{\sqrt{x} e^{\frac{2a}{\sqrt{x}}}}{2a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.216 (sec), leaf count = 102

$$\left\{ y(x) = 1 \left(\left(-2x - C1 \sqrt{-\frac{a^2}{x}} - x \right) \sin \left(2 \sqrt{-\frac{a^2}{x}} \right) - x \left(-C1 - 2 \sqrt{-\frac{a^2}{x}} \right) \cos \left(2 \sqrt{-\frac{a^2}{x}} \right) \right) \left(2 \cos \left(2 \sqrt{-\frac{a^2}{x}} \right) \right) \right\}$$

2.165 ODE No. 165

$$x(2x - 1)y'(x) + y(x)^2 - (4x + 1)y(x) + 4x = 0$$

✓ **Mathematica** : cpu = 0.0167483 (sec), leaf count = 22

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

✓ **Maple** : cpu = 0.023 (sec), leaf count = 17

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

2.166 ODE No. 166

$$2(x - 1)xy'(x) + (x - 1)y(x)^2 - x = 0$$

✓ **Mathematica** : cpu = 0.100404 (sec), leaf count = 71

$$\left\{ \left\{ y(x) \rightarrow \frac{2x \left(\frac{c_1(E(x) - K(x))}{\pi x} - G_{2,2}^{2,0} \left(x \left| \begin{array}{l} -\frac{1}{2}, \frac{1}{2} \\ -1, 0 \end{array} \right. \right) \right)}{G_{2,2}^{2,0} \left(x \left| \begin{array}{l} \frac{1}{2}, \frac{3}{2} \\ 0, 0 \end{array} \right. \right) + \frac{2c_1 E(x)}{\pi}} \right\} \right\}$$

✓ **Maple** : cpu = 0.161 (sec), leaf count = 97

$$\left\{ y(x) = \frac{x}{2x - 2} \left(LegendreQ \left(-\frac{1}{2}, 1, \frac{2-x}{x} \right) - C1 - LegendreQ \left(\frac{1}{2}, 1, \frac{2-x}{x} \right) - C1 + LegendreP \left(-\frac{1}{2}, 1, \frac{2-x}{x} \right) \right) \right\}$$

2.167 ODE No. 167

$$3x^2y'(x) - x^2 - 3xy(x) - 7y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0222904 (sec), leaf count = 35

$$\left\{ \left\{ y(x) \rightarrow \frac{x \tan\left(\frac{1}{3}(3\sqrt{7}c_1 + \sqrt{7}\log(x))\right)}{\sqrt{7}} \right\} \right\}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 20

$$\left\{ y(x) = \frac{x\sqrt{7}}{7} \tan\left(\frac{(\ln(x) + _C1)\sqrt{7}}{3}\right) \right\}$$

2.168 ODE No. 168

$$3(x^2 - 4)y'(x) + y(x)^2 - xy(x) - 3 = 0$$

✓ **Mathematica** : cpu = 0.0931099 (sec), leaf count = 234

$$\left\{ \left\{ y(x) \rightarrow \frac{3(x^2 - 4) \left(c_1 \left(\frac{xP_{-\frac{1}{6}}^{\frac{1}{3}}\left(\frac{x}{2}\right)}{6(x^2-4)^{11/12}} + \frac{{}^{12}\sqrt{x^2-4} \left(\frac{1}{2}P_{\frac{5}{6}}^{\frac{1}{3}}\left(\frac{x}{2}\right) - \frac{5}{12}xP_{-\frac{1}{6}}^{\frac{1}{3}}\left(\frac{x}{2}\right) \right)}{2\left(\frac{x^2}{4}-1\right)} \right) + \frac{xQ_{-\frac{1}{6}}^{\frac{1}{3}}\left(\frac{x}{2}\right)}{6(x^2-4)^{11/12}} + \frac{{}^{12}\sqrt{x^2-4} \left(\frac{1}{2}Q_{\frac{5}{6}}^{\frac{1}{3}}\left(\frac{x}{2}\right) - \frac{5}{12}xQ_{-\frac{1}{6}}^{\frac{1}{3}}\left(\frac{x}{2}\right) \right)}{2\left(\frac{x^2}{4}-1\right)} \right)}{c_1 {}^{12}\sqrt{x^2-4} P_{-\frac{1}{6}}^{\frac{1}{3}}\left(\frac{x}{2}\right) + {}^{12}\sqrt{x^2-4} Q_{-\frac{1}{6}}^{\frac{1}{3}}\left(\frac{x}{2}\right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.191 (sec), leaf count = 140

$$\left\{ y(x) = -3(x+2) \left(HeunC\left(0, 4/3, -1/3, 0, \frac{25}{36}, 4(x+2)^{-1}\right) _C1 - 1/3(-x/4 - 1/2)^{4/3} HeunC\left(0, -\right) \right) \right\}$$

2.169 ODE No. 169

$$(ax + b)^2 y'(x) + y(x)^3 (ax + b) + cy(x)^2 = 0$$

✓ **Mathematica** : cpu = 2.17496 (sec), leaf count = 149

$$\text{Solve} \left[-\frac{c}{\sqrt{-a(ax+b)^2}} = \frac{2 \exp \left(\frac{1}{2} \left(-\frac{c}{\sqrt{-a(ax+b)^2}} - \frac{\sqrt{-a(ax+b)^2}}{y(x)(-ax-b)} \right)^2 \right)}{\sqrt{2\pi} \operatorname{erfi} \left(\frac{-\frac{c}{\sqrt{-a(ax+b)^2}} - \frac{\sqrt{-a(ax+b)^2}}{y(x)(-ax-b)}}{\sqrt{2}} \right)} + 2c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.159 (sec), leaf count = 153

$$\left\{ -C1 + \left(x + \frac{b}{a} + \frac{c\sqrt{\pi}\sqrt{2}}{2} \operatorname{Erf} \left(\frac{\sqrt{2}(a^2x + ab + cy(x))}{2(ax+b)y(x)} \frac{1}{\sqrt{a}} \right) e^{\frac{(a^2x+ab+cy(x))^2}{2(y(x))^2(ax+b)^2a}} a^{-\frac{3}{2}} \right) e^{-\frac{(a^2x+axy(x)+ab+by(x)+cy(x))^2}{2(y(x))^2}} \right\}$$

2.170 ODE No. 170

$$-x^4 + x^3 y'(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0222968 (sec), leaf count = 43

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

✓ **Maple** : cpu = 0.019 (sec), leaf count = 23

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

2.171 ODE No. 171

$$x^3 y'(x) - x^2 y(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.00980367 (sec), leaf count = 17

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

✓ **Maple** : cpu = 0.011 (sec), leaf count = 15

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

2.172 ODE No. 172

$$x^4(-y(x)^2) + x^3 y'(x) + x^2 y(x) + 20 = 0$$

✓ **Mathematica** : cpu = 0.0394294 (sec), leaf count = 35

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

✓ **Maple** : cpu = 0.292 (sec), leaf count = 26

$$\left\{ y(x) = \frac{5 x^9 + 4 _C1}{(-x^9 + _C1) x^2} \right\}$$

2.173 ODE No. 173

$$x^6(-y(x)^2) + x^3 y'(x) - (2x - 3)x^2 y(x) + 3 = 0$$

✓ **Mathematica** : cpu = 0.0159528 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{x^3 (c_1 e^{4x} + \frac{1}{4})} - \frac{3}{x^3} \right\} \right\}$$

✓ **Maple** : cpu = 0.045 (sec), leaf count = 27

$$\left\{ y(x) = -3 \frac{(e^x)^4 _C1 + 1}{x^3 ((e^x)^4 _C1 - 3)} \right\}$$

2.174 ODE No. 174

$$(x^2 + 1)xy'(x) + x^2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0075977 (sec), leaf count = 17

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

✓ **Maple** : cpu = 0.004 (sec), leaf count = 13

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

2.175 ODE No. 175

$$ax^3 + (x^2 - 1)xy'(x) - (2x^2 - 1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0196857 (sec), leaf count = 24

$$\left\{ \left\{ y(x) \rightarrow ax + c_1\sqrt{1 - x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 21

$$\left\{ y(x) = x\sqrt{1 + x}\sqrt{x - 1} - C1 + ax \right\}$$

2.176 ODE No. 176

$$(x^2 - 1)xy'(x) + (x^2 - 1)y(x)^2 - x^2 = 0$$

✓ **Mathematica** : cpu = 0.121471 (sec), leaf count = 82

$$\left\{ \left\{ y(x) \rightarrow \frac{x \left(\frac{2c_1(E(x^2) - K(x^2))}{\pi x} - 2xG_{2,2}^{2,0} \left(x^2 \mid \begin{matrix} -\frac{1}{2}, \frac{1}{2} \\ -1, 0 \end{matrix} \right) \right)}{G_{2,2}^{2,0} \left(x^2 \mid \begin{matrix} \frac{1}{2}, \frac{3}{2} \\ 0, 0 \end{matrix} \right) + \frac{2c_1E(x^2)}{\pi}} \right\} \right\}$$

✓ **Maple** : cpu = 0.105 (sec), leaf count = 45

$$\left\{ y(x) = -\frac{\text{EllipticK}(x)}{-C1 \text{EllipticCE}(x) - C1 \text{EllipticCK}(x) + \text{EllipticE}(x)} + \frac{-C1 \text{EllipticCE}(x)}{-C1 \text{EllipticCE}(x) - C1 \text{EllipticCK}(x) + \text{EllipticE}(x)} \right\}$$

2.177 ODE No. 177

$$(x - 1)x^2y'(x) - (x - 2)xy(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0160501 (sec), leaf count = 22

$$\left\{ \left\{ y(x) \rightarrow -\frac{x^2}{c_1x - c_1 - 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.027 (sec), leaf count = 18

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

2.178 ODE No. 178

$$2(x^2 - 1)xy'(x) + 2(x^2 - 1)y(x)^2 - (3x^2 - 5)y(x) + x^2 - 3 = 0$$

✓ **Mathematica** : cpu = 0.0735499 (sec), leaf count = 62

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt{x}}{\sqrt{1-x^2} \left(c_1 - \frac{2\sqrt{1-\frac{1}{x^2}} x F\left(\sin^{-1}\left(\frac{1}{\sqrt{x}}\right) | -1\right)}{\sqrt{1-x^2}} \right)} + 1 \right\} \right\}$$

✓ **Maple** : cpu = 0.129 (sec), leaf count = 63

$$\left\{ y(x) = 1 - 2 \frac{\sqrt{x}}{\sqrt{x-1}\sqrt{1+x}} \left(-C1 - 2 \frac{\text{EllipticF}(\sqrt{1+x}, 1/2\sqrt{2}) \sqrt{-x}\sqrt{-2x+2\sqrt{2}}}{\sqrt{2x-2\sqrt{x}}} \right)^{-1} \right\}$$

2.179 ODE No. 179

$$3x(x^2 - 1)y'(x) - (x^2 + 1)y(x) + xy(x)^2 - 3x = 0$$

✓ **Mathematica** : cpu = 1.65909 (sec), leaf count = 2816

$$\left\{ \left\{ y(x) \rightarrow \frac{3(x^2 - 1) \left(\frac{e^{\int_1^x \text{Root}[125K[1]^8 - 164K[1]^6 + 70K[1]^4 - 20K[1]^2 + (1296K[1]^{12} - 5184K[1]^{10} + 7776K[1]^8 - 5184K[1]^6 + 1296K[1]^4) \#1^4 + (-3}}{\dots}} \right)}{\dots} \right\} \right\}$$

✓ **Maple** : cpu = 0.159 (sec), leaf count = 145

$$\left\{ y(x) = \frac{35_C1 x^4 - 35_C1 x^2}{8} {}_2F_1\left(\frac{11}{6}, \frac{13}{6}; \frac{7}{3}; x^2\right) \frac{1}{\sqrt[3]{x}} \left(x^{\frac{2}{3}} {}_2F_1\left(\frac{5}{6}, \frac{7}{6}; \frac{4}{3}; x^2\right) - C1 + {}_2F_1\left(\frac{1}{2}, \frac{5}{6}; \frac{2}{3}; x^2\right) \right)^{-1} \right\}$$

2.180 ODE No. 180

$$(xy'(x) - y(x))(ax^2 + bx + c) + x^2 - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.12265 (sec), leaf count = 132

$$\left\{ \left\{ y(x) \rightarrow - \frac{x \left(\exp \left(\frac{4 \tan^{-1} \left(\frac{2ax}{\sqrt{4ac-b^2}} + \frac{b}{\sqrt{4ac-b^2}} \right) + 2c_1 \right) - 1 \right)}{\exp \left(\frac{4 \tan^{-1} \left(\frac{2ax}{\sqrt{4ac-b^2}} + \frac{b}{\sqrt{4ac-b^2}} \right) + 2c_1 \right) + 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.054 (sec), leaf count = 58

$$\left\{ y(x) = - \tanh \left(1 \left(-C1 \sqrt{4ac - b^2} + 2 \arctan \left(\frac{2ax + b}{\sqrt{4ac - b^2}} \right) \right) \frac{1}{\sqrt{4ac - b^2}} \right) x \right\}$$

2.181 ODE No. 181

$$a + x^4(y'(x) + y(x)^2) = 0$$

✓ **Mathematica** : cpu = 0.0123059 (sec), leaf count = 347

$$\left\{ \left\{ y(x) \rightarrow - \frac{i\sqrt{\frac{2}{\pi}} c_1 \sinh\left(\frac{\sqrt{-a}}{x}\right) + i\sqrt{-a} \left(-\frac{\sqrt{\frac{2}{\pi}} c_1 \cosh\left(\frac{\sqrt{-a}}{x}\right)}{\sqrt{-i\sqrt{-a}}} + \frac{\sqrt{\frac{2}{\pi}} c_1 \left(-\frac{\sqrt{-a} x \sinh\left(\frac{\sqrt{-a}}{x}\right) - \cosh\left(\frac{\sqrt{-a}}{x}\right) \right)}{\sqrt{-i\sqrt{-a}}} \right) - 2\sqrt{\frac{2}{\pi}} \left(i \sinh\left(\frac{\sqrt{-a}}{x}\right) + \frac{i\sqrt{-a}}{\sqrt{-i\sqrt{-a}}} \right)}{x} \right\} \right\} \frac{2x \left(\frac{\sqrt{\frac{2}{\pi}} \cosh\left(\frac{\sqrt{-a}}{x}\right)}{\sqrt{-i\sqrt{-a}}} - \frac{i\sqrt{\frac{2}{\pi}} c_1 \sinh\left(\frac{\sqrt{-a}}{x}\right)}{\sqrt{-i\sqrt{-a}}} \right)}{2x}$$

✓ **Maple** : cpu = 0.08 (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

$$(x^3 - 1) xy'(x) + x^2 - 2xy(x)^2 + y(x) = 0$$

✓ **Mathematica** : cpu = 0.171584 (sec), leaf count = 96

$$\left\{ \left\{ y(x) \rightarrow -\frac{(x^3 - 1) \left(\frac{2c_1 x^2}{(1-x^3)^{5/3}} + \frac{x}{(1-x^3)^{2/3}} + \frac{x^4}{(1-x^3)^{5/3}} \right)}{2 \left(\frac{c_1}{(1-x^3)^{2/3}} + \frac{x^2}{2(1-x^3)^{2/3}} \right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.132 (sec), leaf count = 18

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

2.183 ODE No. 183

$$(2x^4 - x) y'(x) - 2(x^3 - 1) y(x) = 0$$

✓ **Mathematica** : cpu = 0.0143564 (sec), leaf count = 22

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 x^2}{\sqrt[3]{1 - 2x^3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.014 (sec), leaf count = 18

$$\left\{ y(x) = _C1 x^2 \frac{1}{\sqrt[3]{2x^3 - 1}} \right\}$$

2.184 ODE No. 184

$$(y'(x) + y(x)^2)(ax^2 + bx + c)^2 + A = 0$$

✓ **Mathematica** : cpu = 1.4681 (sec), leaf count = 704

$$y(x) \rightarrow \frac{2a\sqrt{ax^2+bx+c} \exp\left(-\frac{\sqrt{4ac-b^2}\sqrt{1-\frac{4A}{b^2-4ac}} \tan^{-1}\left(\frac{2ax+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{b^2-4ac}}\right) + (2ax+b) \exp\left(-\frac{\sqrt{4ac-b^2}\sqrt{1-\frac{4A}{b^2-4ac}} \tan^{-1}\left(\frac{2ax+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{b^2-4ac}}\right)}{(b^2-4ac)\left(\frac{(2ax+b)^2}{4ac-b^2}+1\right)} + \frac{c_1\sqrt{x(ax+b)+c} \left(-\exp\left(\frac{\sqrt{4ac-b^2}\sqrt{1-\frac{4A}{b^2-4ac}} \tan^{-1}\left(\frac{2ax+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{b^2-4ac}}\right)\right)}{2\sqrt{b^2-4ac}\sqrt{1-\frac{4A}{b^2-4ac}}\sqrt{ax^2+bx+c}}$$

✓ **Maple** : cpu = 0.362 (sec), leaf count = 846

$$y(x) = -2 \frac{a}{\sqrt{-4ac+b^2}(2ax+b+i\sqrt{4ac-b^2})(i\sqrt{4ac-b^2}-2ax-b)} \left(-i\sqrt{4ac-b^2}\sqrt{-\frac{4ac-b^2}{a^2}}\right)$$

2.185 ODE No. 185

$$x^7y'(x) + 5x^3y(x)^2 + 2(x^2 + 1)y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.373786 (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 = 0.046 (sec), leaf count = 63

$$\left\{ -C1 + x \frac{1}{\sqrt[4]{\left(x^{-1} + \frac{x^2}{y(x)}\right)^2 + 1}} + \frac{x^3 + y(x)}{2xy(x)} {}_2F_1\left(\frac{1}{2}, \frac{5}{4}; \frac{3}{2}; -\frac{(x^3 + y(x))^2}{x^2(y(x))^2}\right) = 0 \right\}$$

2.186 ODE No. 186

$$-(n-1)x^{n-1}y(x) + x^{2n-2} + x^n y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0289419 (sec), leaf count = 19

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

✓ **Maple** : cpu = 0.036 (sec), leaf count = 17

$$\{y(x) = \tan(-\ln(x) + _C1) x^{n-1}\}$$

2.187 ODE No. 187

$$-ay(x)^2 - bx^{2n-2} + x^n y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0696992 (sec), leaf count = 328

$$\left\{ \left\{ y(x) \rightarrow -\frac{x^n \left(\frac{1}{2} \sqrt{a} \sqrt{b} c_1 \left(-\frac{n-1}{\sqrt{a}\sqrt{b}} - \sqrt{\frac{(n-1)^2}{ab} - 4} \right) x^{\frac{1}{2} \sqrt{a}\sqrt{b} \left(-\frac{n-1}{\sqrt{a}\sqrt{b}} - \sqrt{\frac{(n-1)^2}{ab} - 4} \right)^{-1}} + \frac{1}{2} \sqrt{a}\sqrt{b} \left(\sqrt{\frac{(n-1)^2}{ab} - 4} - \frac{n-1}{\sqrt{a}\sqrt{b}} \right) \right)}{a \left(c_1 x^{\frac{1}{2} \sqrt{a}\sqrt{b} \left(-\frac{n-1}{\sqrt{a}\sqrt{b}} - \sqrt{\frac{(n-1)^2}{ab} - 4} \right)} + x^{\frac{1}{2} \sqrt{a}\sqrt{b} \left(\sqrt{\frac{(n-1)^2}{ab} - 4} - \frac{n-1}{\sqrt{a}\sqrt{b}} \right)} \right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.053 (sec), leaf count = 88

$$\left\{ y(x) = \frac{1}{2a} \left(-x^{n-1} \tan \left(-\frac{\ln(x)}{2} \sqrt{4ab - n^2 + 2n - 1} + \frac{C1}{2} \sqrt{4ab - n^2 + 2n - 1} \right) \sqrt{4ab - n^2 + 2n - 1} \right) \right\}$$

2.188 ODE No. 188

$$-ay(x)^3 - bx^3 + x^{2n+1} y'(x) = 0$$

✗ **Mathematica** : cpu = 20.633 (sec), leaf count = 0 , could not solve

`DSolve[-(b*n*x^3) - a*y[x]^3 + x^(1 + 2*n)*Derivative[1][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.024 (sec), leaf count = 32

$$\left\{ y(x) = \text{RootOf} \left(-\ln(x) + _C1 + \int^{-Z} (a_a^3 - n_a + b)^{-1} d_a \right) x^n \right\}$$

2.189 ODE No. 189

$$-ay(x)^n - bx^{(m+1)n} + x^{m(n-1)+n}y'(x) = 0$$

✓ **Mathematica** : cpu = 82.2528 (sec), leaf count = 90

$$\text{Solve} \left[\int_1^{y(x) \left(\frac{ax^{-(m+1)n}}{b} \right)^{\frac{1}{n}}} \frac{1}{-K[1] \left(\frac{b^{1-n}(m+1)^n}{a} \right)^{\frac{1}{n}} + K[1]^n + 1} dK[1] = bx^{m+1} \log(x) \left(\frac{ax^{-(m+1)n}}{b} \right)^{\frac{1}{n}} + c_1, y \right]$$

✓ **Maple** : cpu = 0.24 (sec), leaf count = 61

$$\left\{ \int_{-b}^{y(x)} \frac{x^{mn} x^n}{-x^n (bx^m x - (m+1) _a) x^{mn} - a _a^n x^m x} d_a + \ln(x) - _C1 = 0 \right\}$$

2.190 ODE No. 190

$$\sqrt{x^2 - 1}y'(x) - \sqrt{y(x)^2 - 1} = 0$$

✓ **Mathematica** : cpu = 0.0507808 (sec), leaf count = 55

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

✓ **Maple** : cpu = 0.01 (sec), leaf count = 29

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

2.191 ODE No. 191

$$\sqrt{1 - x^2}y'(x) - y(x)\sqrt{y(x)^2 - 1} = 0$$

✓ **Mathematica** : cpu = 0.0307956 (sec), leaf count = 52

$$\left\{ \left\{ y(x) \rightarrow \sqrt{\tan^2(c_1 + \sin^{-1}(x)) + 1} (-\cot(c_1 + \sin^{-1}(x))) \right\}, \left\{ y(x) \rightarrow \sqrt{\tan^2(c_1 + \sin^{-1}(x)) + 1} \cot(c_1 + \sin^{-1}(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.019 (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

$$\sqrt{a^2 + x^2}y'(x) - \sqrt{a^2 + x^2} + y(x) + x = 0$$

✓ **Mathematica** : cpu = 0.0280674 (sec), leaf count = 57

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

✓ **Maple** : cpu = 0.019 (sec), leaf count = 36

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

2.193 ODE No. 193

$$-ax(\log(x) + 1) + x \log(x)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.00856341 (sec), leaf count = 16

$$\left\{ \left\{ y(x) \rightarrow ax + \frac{c_1}{\log(x)} \right\} \right\}$$

✓ **Maple** : cpu = 0.007 (sec), leaf count = 14

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

2.194 ODE No. 194

$$x \log(x)y'(x) - y(x) (2 \log^2(x) + 1) - y(x)^2 \log(x) - \log^3(x) = 0$$

✓ **Mathematica** : cpu = 0.075074 (sec), leaf count = 98

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

✓ **Maple** : cpu = 0.024 (sec), leaf count = 23

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

2.195 ODE No. 195

$$\sin(x)y'(x) + y(x)^2 (-\sin^2(x)) + y(x)(\cos(x) - 3\sin(x)) + 4 = 0$$

✓ **Mathematica** : cpu = 0.056241 (sec), leaf count = 27

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

✓ **Maple** : cpu = 0.108 (sec), leaf count = 28

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

2.196 ODE No. 196

$$\cos(x)y'(x) + y(x) + (\sin(x) + 1)\cos(x) = 0$$

✓ **Mathematica** : cpu = 0.0556487 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-2 \tanh^{-1}(\tan(\frac{x}{2}))} + e^{-2 \tanh^{-1}(\tan(\frac{x}{2}))} \left(\sin(x) + 4 \log \left(\cos \left(\frac{x}{2} \right) - \sin \left(\frac{x}{2} \right) \right) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.105 (sec), leaf count = 23

$$\left\{ y(x) = \frac{\sin(x) + 2 \ln(\sin(x) - 1) + _C1}{\sec(x) + \tan(x)} \right\}$$

2.197 ODE No. 197

$$\cos(x)y'(x) - y(x)^4 - y(x)\sin(x) = 0$$

✓ **Mathematica** : cpu = 0.0421246 (sec), leaf count = 98

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{\sqrt[3]{c_1 \cos^3(x) - \sin(x) - 2 \sin(x) \cos^2(x)}} \right\}, \left\{ y(x) \rightarrow -\frac{\sqrt[3]{-1}}{\sqrt[3]{c_1 \cos^3(x) - \sin(x) - 2 \sin(x) \cos^2(x)}} \right\} \right\}$$

✓ **Maple** : cpu = 0.065 (sec), leaf count = 364

$$\left\{ y(x) = \frac{1}{_C1 (\sin(x))^4 + 2 \cos(x) (\sin(x))^3 - 2 _C1 (\sin(x))^2 - 3 \cos(x) \sin(x) + _C1} \sqrt[3]{\cos(x) (_C1} \right\}$$

2.198 ODE No. 198

$$\sin(x)\cos(x)y'(x) - y(x) - \sin^3(x) = 0$$

✓ **Mathematica** : cpu = 0.0244327 (sec), leaf count = 15

$$\{ \{ y(x) \rightarrow c_1 \tan(x) - \sin(x) \} \}$$

✓ **Maple** : cpu = 0.016 (sec), leaf count = 15

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

2.199 ODE No. 199

$$\sin(2x)y'(x) + \sin(2y(x)) = 0$$

✓ **Mathematica** : cpu = 0.185554 (sec), leaf count = 15

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

✓ **Maple** : cpu = 0.159 (sec), leaf count = 100

$$\left\{ y(x) = \frac{1}{2} \arctan \left(2 \frac{-C1 (2 \sin(2x) + \sin(4x))}{-C1^2 \cos(4x) + C1^2 + 4 \cos(2x) + \cos(4x) + 3}, -\frac{-C1^2 \cos(4x) - C1^2}{-C1^2 \cos(4x) + C1^2} \right) \right\}$$

2.200 ODE No. 200

$$Ax(a \sin^2(x) + c) + y'(x) (a \sin^2(x) + b) + ay(x) \sin(2x) = 0$$

✓ **Mathematica** : cpu = 0.0509687 (sec), leaf count = 77

$$\left\{ \left\{ y(x) \rightarrow \frac{\frac{1}{2}aAx^2 - \frac{1}{2}aAx \sin(2x) - \frac{1}{4}aA \cos(2x) + Acx^2}{a \cos(2x) - a - 2b} + \frac{c_1}{a \cos(2x) - a - 2b} \right\} \right\}$$

✓ **Maple** : cpu = 0.057 (sec), leaf count = 56

$$\left\{ y(x) = \frac{-2A \sin(2x) ax + 2Aax^2 + 4Acx^2 - A \cos(2x) a - 8C1}{4a \cos(2x) - 4a - 8b} \right\}$$

2.201 ODE No. 201

$$-y(x)f'(x) + 2f(x)y'(x) + 2f(x)y(x)^2 - 2f(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0759424 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow i \sqrt{f(x)} \tan \left(c_1 + i \int_1^x -\sqrt{f(K[1])} dK[1] \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.039 (sec), leaf count = 23

$$\left\{ y(x) = i \tan \left(-i \int \sqrt{f(x)} dx + C1 \right) \sqrt{f(x)} \right\}$$

2.202 ODE No. 202

$$f(x)y'(x) + g(x)\text{tg}(y(x)) + h(x) = 0$$

✗ **Mathematica** : cpu = 20.5485 (sec), leaf count = 0 , could not solve

DSolve[h[x] + g[x]*tg[y[x]] + f[x]*Derivative[1][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(f(x)*diff(y(x),x)+g(x)*tg(y(x))+h(x) = 0,y(x))

2.203 ODE No. 203

$$x^3 + y(x)y'(x) + y(x) = 0$$

✗ **Mathematica** : cpu = 3.27687 (sec), leaf count = 0 , could not solve

DSolve[x^3 + y[x] + y[x]*Derivative[1][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(y(x)*diff(y(x),x)+y(x)+x^3 = 0,y(x))

2.204 ODE No. 204

$$ay(x) + y(x)y'(x) + x = 0$$

✓ **Mathematica** : cpu = 0.0701949 (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 = 0.279 (sec), leaf count = 91

$$\left\{ y(x) = \text{RootOf} \left(-Z^2 - e^{\text{RootOf} \left(x^2 \left(-\left(\tanh \left(\frac{2-C1+Z+2 \ln(x)}{2a} \sqrt{(a-2)(a+2)} \right) \right)^2 a^2 + 4 \left(\tanh \left(1/2 \frac{\sqrt{(a-2)(a+2)}(2-C1+Z+2 \ln(x))}{a} \right) \right)} \right) \right) \right.$$

2.205 ODE No. 205

$$\frac{1}{4}(a^2 - 1)x + ay(x) + bx^n + y(x)y'(x) = 0$$

✗ **Mathematica** : cpu = 24.967 (sec), leaf count = 0 , could not solve

`DSolve[((-1 + a^2)*x)/4 + b*x^n + a*y[x] + y[x]*Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(y(x)*diff(y(x),x)+a*y(x)+1/4*(a^2-1)*x+b*x^n = 0,y(x))`

2.206 ODE No. 206

$$ay(x) - 2a + be^x + y(x)y'(x) = 0$$

✗ **Mathematica** : cpu = 29.9509 (sec), leaf count = 0 , could not solve

`DSolve[-2*a + b*E^x + a*y[x] + y[x]*Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(y(x)*diff(y(x),x)+a*y(x)+b*exp(x)-2*a = 0,y(x))`

2.207 ODE No. 207

$$y(x)y'(x) + y(x)^2 + 4x(x + 1) = 0$$

✓ **Mathematica** : cpu = 0.0121716 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{c_1 e^{-2x} - 4x^2} \right\}, \left\{ y(x) \rightarrow \sqrt{c_1 e^{-2x} - 4x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 37

$$\left\{ y(x) = \sqrt{e^{-2x} C1 - 4x^2}, y(x) = -\sqrt{e^{-2x} C1 - 4x^2} \right\}$$

2.208 ODE No. 208

$$ay(x)^2 - b \cos(c + x) + y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0718223 (sec), leaf count = 118

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{4a^2c_1e^{-2ax} + 4ab \cos(c + x) + c_1e^{-2ax} + 2b \sin(c + x)}}{\sqrt{4a^2 + 1}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{4a^2c_1e^{-2ax} + 4ab \cos(c + x) + c_1e^{-2ax} + 2b \sin(c + x)}}{\sqrt{4a^2 + 1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.069 (sec), leaf count = 116

$$\left\{ y(x) = \frac{1}{4a^2 + 1} \sqrt{(4a^2 + 1)(4e^{-2ax} - C1 a^2 + 4 \cos(x + c) ab + e^{-2ax} - C1 + 2 \sin(x + c) b)}, y(x) = -\frac{1}{4a^2 + 1} \sqrt{(4a^2 + 1)(4e^{-2ax} - C1 a^2 + 4 \cos(x + c) ab + e^{-2ax} - C1 + 2 \sin(x + c) b)} \right\}$$

2.209 ODE No. 209

$$y(x)y'(x) - \sqrt{ay(x)^2 + b} = 0$$

✓ **Mathematica** : cpu = 0.0222581 (sec), leaf count = 84

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{2a^2c_1x + a^2c_1^2 + a^2x^2 - b}}{\sqrt{a}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{2a^2c_1x + a^2c_1^2 + a^2x^2 - b}}{\sqrt{a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.012 (sec), leaf count = 21

$$\left\{ x - \frac{1}{a} \sqrt{a(y(x))^2 + b} + C1 = 0 \right\}$$

2.210 ODE No. 210

$$y(x)y'(x) + xy(x)^2 - 4x = 0$$

✓ **Mathematica** : cpu = 0.0167841 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{e^{2c_1-x^2} + 4} \right\}, \left\{ y(x) \rightarrow \sqrt{e^{2c_1-x^2} + 4} \right\} \right\}$$

✓ **Maple** : cpu = 0.02 (sec), leaf count = 33

$$\left\{ y(x) = \sqrt{e^{-x^2} - C1 + 4}, y(x) = -\sqrt{e^{-x^2} - C1 + 4} \right\}$$

2.211 ODE No. 211

$$y(x)y'(x) - xe^{\frac{x}{y(x)}} = 0$$

✓ **Mathematica** : cpu = 38.7991 (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 = 0.033 (sec), leaf count = 31

$$\left\{ y(x) = \text{RootOf} \left(- \int^{-Z} \frac{-a}{-a^2 + e^{-a^{-1}}} d_a + \ln(x) + _C1 \right) x \right\}$$

2.212 ODE No. 212

$$g(x)f(x^2 + y(x)^2) + y(x)y'(x) + x = 0$$

✓ **Mathematica** : cpu = 21.8402 (sec), leaf count = 92

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{K[2]}{f(K[2]^2 + x^2)} - \int_1^x - \frac{2K[1]K[2]f'(K[1]^2 + K[2]^2)}{f(K[1]^2 + K[2]^2)^2} dK[1] \right) dK[2] + \int_1^x \left(\frac{K[1]}{f(K[1]^2 + y(x)^2)} \right) dK[1] = c_1 \right]$$

✓ **Maple** : cpu = 0.135 (sec), leaf count = 30

$$\left\{ \int_{-b}^{y(x)} \frac{-a}{f(-a^2 + x^2)} d_a + \int g(x) dx - _C1 = 0 \right\}$$

2.213 ODE No. 213

$$(y(x) + 1)y'(x) - y(x) - x = 0$$

✓ **Mathematica** : cpu = 0.100617 (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 = 0.652 (sec), leaf count = 73

$$\left\{ -\frac{1}{2} \ln \left(-\frac{(x-1)^2 - (x-1)(-y(x)-1) - (-y(x)-1)^2}{(x-1)^2} \right) - \frac{\sqrt{5}}{5} \operatorname{Artanh} \left(\frac{(x-3-2y(x))\sqrt{5}}{5x-5} \right) - \ln \right\}$$

2.214 ODE No. 214

$$(y(x) + x - 1)y'(x) - y(x) + 2x + 3 = 0$$

✓ **Mathematica** : cpu = 0.108876 (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 = 0.146 (sec), leaf count = 65

$$\left\{ y(x) = \frac{5}{3} - \frac{\tan(\operatorname{RootOf}(\sqrt{2} \ln(18(\tan(_Z))^2 x^2 + 24(\tan(_Z))^2 x + 8(\tan(_Z))^2 + 18x^2 + 24x + 11)))}{3} \right\}$$

2.215 ODE No. 215

$$(y(x) + 2x - 2)y'(x) - y(x) + x + 1 = 0$$

✓ **Mathematica** : cpu = 0.12015 (sec), leaf count = 80

$$\text{Solve} \left[6\sqrt{3} \tan^{-1} \left(\frac{4 - 3y(x)}{\sqrt{3}(y(x) + 2x - 2)} \right) = 2c_1 + 3 \log \left(\frac{3x^2 + 3y(x)^2 + 3(x-3)y(x) - 6x + 7}{(1-3x)^2} \right) + 6 \log(3x + 2) \right]$$

✓ **Maple** : cpu = 0.174 (sec), leaf count = 68

$$\left\{ y(x) = \frac{3}{2} - \frac{x}{2} + \frac{\sqrt{3}(3x-1)}{6} \tan \left(\operatorname{RootOf} \left(\sqrt{3} \ln \left(\frac{27x^2}{4} - \frac{9x}{2} + \frac{3}{4} + \frac{27(\tan(_Z))^2 x^2}{4} - \frac{9(\tan(_Z))^2 x}{2} + \frac{3}{4} \right) \right) \right) \right\}$$

2.216 ODE No. 216

$$(y(x) - 2x + 1)y'(x) + y(x) + x = 0$$

✓ **Mathematica** : cpu = 0.10228 (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 = 0.159 (sec), leaf count = 68

$$\left\{ y(x) = -\frac{1}{2} + \frac{x}{2} - \frac{\sqrt{3}(3x - 1)}{6} \tan \left(\text{RootOf} \left(\sqrt{3} \ln \left(\frac{27x^2}{4} - \frac{9x}{2} + \frac{3}{4} + \frac{27(\tan(_Z))^2 x^2}{4} - \frac{9(\tan(_Z))}{2} \right) \right) \right) \right\}$$

2.217 ODE No. 217

$$(y(x) - x^2) y'(x) - x = 0$$

✓ **Mathematica** : cpu = 0.0191878 (sec), leaf count = 29

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

✓ **Maple** : cpu = 0.033 (sec), leaf count = 23

$$\left\{ y(x) = x^2 + \frac{\text{lambertW} \left(-4_C1 e^{-2x^2 - 1} \right)}{2} + \frac{1}{2} \right\}$$

2.218 ODE No. 218

$$(y(x) - x^2) y'(x) + 4xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0993618 (sec), leaf count = 257

$$\left\{ \left\{ y(x) \rightarrow x^2 + \frac{1}{-\frac{1}{2x^2} - \frac{\frac{1}{2} - \frac{i}{2}}{\sqrt{2}x^2 \sqrt{x^2 \sinh\left(\frac{2c_1}{9}\right) + x^2 \cosh\left(\frac{2c_1}{9}\right) - i}}} \right\} \right\}, \left\{ \left\{ y(x) \rightarrow x^2 + \frac{1}{-\frac{1}{2x^2} + \frac{\frac{1}{2} - \frac{i}{2}}{\sqrt{2}x^2 \sqrt{x^2 \sinh\left(\frac{2c_1}{9}\right) + x^2 \cosh\left(\frac{2c_1}{9}\right) - i}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.178 (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

$$-f_0(x) - f_1(x)y(x) - f_2(x)y(x)^2 + (g(x) + y(x))y'(x) = 0$$

✗ **Mathematica** : cpu = 300.948 (sec), leaf count = 0 , timed out

\$Aborted

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve((y(x)+g(x))*diff(y(x),x)-f2(x)*y(x)^2-f1(x)*y(x)-f0(x) = 0,y(x))

2.220 ODE No. 220

$$-x^3 + 2y(x)y'(x) - xy(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0139644 (sec), leaf count = 57

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

✓ **Maple** : cpu = 0.023 (sec), leaf count = 43

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

2.221 ODE No. 221

$$(2y(x) + x + 1)y'(x) - 2y(x) - x + 1 = 0$$

✓ **Mathematica** : cpu = 0.0179271 (sec), leaf count = 35

$$\left\{ \left\{ y(x) \rightarrow \frac{2}{3} \left(W \left(-e^{c_1 + \frac{9x}{4}} - 1 \right) + 1 \right) + \frac{1}{2}(-x - 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.05 (sec), leaf count = 21

$$\left\{ y(x) = -\frac{x}{2} + \frac{2}{3} \operatorname{lambertW} \left(\frac{e^{-\frac{1}{4}} C1}{4} e^{\frac{9x}{4}} \right) + \frac{1}{6} \right\}$$

2.222 ODE No. 222

$$(2y(x) + x + 7)y'(x) - y(x) + 2x + 4 = 0$$

✓ **Mathematica** : cpu = 0.0565268 (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 = 0.053 (sec), leaf count = 31

$$\{y(x) = -2 - \tan(\text{RootOf}(-_Z + \ln((\cos(_Z))^{-2}) + 2 \ln(x+3) + 2_C1)) (x+3)\}$$

2.223 ODE No. 223

$$(2y(x) - x)y'(x) - y(x) - 2x = 0$$

✓ **Mathematica** : cpu = 0.0252986 (sec), leaf count = 55

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(x - \sqrt{5x^2 - 4e^{c_1}} \right) \right\}, \left\{ y(x) \rightarrow \frac{1}{2} \left(\sqrt{5x^2 - 4e^{c_1}} + x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.145 (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

$$(2y(x) - 6x)y'(x) - y(x) + 3x + 2 = 0$$

✓ **Mathematica** : cpu = 0.0183098 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow 3x - \frac{2}{5} \left(W \left(-e^{c_1 + \frac{25x}{4} - 1} \right) + 1 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.052 (sec), leaf count = 35

$$\left\{ y(x) = \frac{1}{5} e^{-\text{lambertW} \left(-\frac{e^{-1}}{2} e^{\frac{25x}{4}} e^{-\frac{25-C1}{4}} \right) + \frac{25x}{4} - 1 - \frac{25-C1}{4}} + 3x - \frac{2}{5} \right\}$$

2.225 ODE No. 225

$$(4y(x) + 2x + 3)y'(x) - 2y(x) - x - 1 = 0$$

✓ **Mathematica** : cpu = 0.0168996 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{8}(W(-e^{c_1+8x-1}) + 1) + \frac{1}{4}(-2x - 3) \right\} \right\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 20

$$\left\{ y(x) = -\frac{x}{2} + \frac{\text{lambertW}(e^5(e^x)^8 - C1)}{8} - \frac{5}{8} \right\}$$

2.226 ODE No. 226

$$(4y(x) - 2x - 3)y'(x) + 2y(x) - x - 1 = 0$$

✓ **Mathematica** : cpu = 0.0168001 (sec), leaf count = 35

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{8}(-W(-e^{c_1+8x-1}) - 1) + \frac{1}{4}(2x + 3) \right\} \right\}$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 21

$$\left\{ y(x) = \frac{x}{2} - \frac{\text{lambertW}(-e^5(e^x)^8 - C1)}{8} + \frac{5}{8} \right\}$$

2.227 ODE No. 227

$$(4y(x) - 3x - 5)y'(x) - 3y(x) + 7x + 2 = 0$$

✓ **Mathematica** : cpu = 0.0121642 (sec), leaf count = 107

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}(3x + 5) - \frac{1}{2}i\sqrt{-4c_1 - 2\left(-\frac{7x^2}{2} - 2x\right) - \frac{1}{4}(3x + 5)^2} \right\}, \left\{ y(x) \rightarrow \frac{1}{4}(3x + 5) + \frac{1}{2}i\sqrt{-4c_1 - 2\left(-\frac{7x^2}{2} - 2x\right) - \frac{1}{4}(3x + 5)^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.155 (sec), leaf count = 38

$$\left\{ y(x) = \frac{29}{19} - \frac{1}{38 - C1} \left(-\frac{(57x - 21) - C1}{2} + \frac{1}{2}\sqrt{-19(19x - 7)^2 - C1^2 + 4} \right) \right\}$$

2.228 ODE No. 228

$$(4y(x) + 11x - 11)y'(x) - 25y(x) - 8x + 62 = 0$$

✓ **Mathematica** : cpu = 0.288393 (sec), leaf count = 3357

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4} \left(-\frac{81(9x-1) \left(81 \cosh\left(\frac{3c_1}{8}\right) x^2 + 81 \sinh\left(\frac{3c_1}{8}\right) x^2 - 18 \cosh\left(\frac{3c_1}{8}\right) x - 18 \sinh\left(\frac{3c_1}{8}\right) x + \cosh\left(\frac{3c_1}{8}\right) + \sinh\left(\frac{3c_1}{8}\right) - 1 \right) \sqrt[3]{-258280}}{\dots} \right. \right.$$

✓ **Maple** : cpu = 0.3 (sec), leaf count = 377

$$\left\{ y(x) = \frac{22}{9} + 36(9x - 1) \left(-1/27 \sqrt[3]{64 - 8748(9x - 1)^2 - C1} + 108 \sqrt{6561(9x - 1)^4 - C1^2} - 96(9x - 1) \right) \right.$$

2.229 ODE No. 229

$$(12y(x) - 5x - 8)y'(x) - 5y(x) + 2x + 3 = 0$$

✓ **Mathematica** : cpu = 0.0121719 (sec), leaf count = 121

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{12}(5x + 8) - \frac{i\sqrt{-12c_1 - 24\left(-\frac{x^2}{12} - \frac{x}{4}\right) - \frac{1}{12}(5x + 8)^2}}{2\sqrt{3}} \right\}, \left\{ y(x) \rightarrow \frac{1}{12}(5x + 8) + \frac{i\sqrt{-12c_1 - 24\left(-\frac{x^2}{12} - \frac{x}{4}\right) - \frac{1}{12}(5x + 8)^2}}{2\sqrt{3}} \right\} \right.$$

✓ **Maple** : cpu = 0.156 (sec), leaf count = 33

$$\left\{ y(x) = -1 - \frac{1}{-C1} \left(-\frac{(5x + 20) - C1}{12} + \frac{1}{12} \sqrt{(x + 4)^2 - C1^2 + 24} \right) \right\}$$

2.230 ODE No. 230

$$ay(x)y'(x) + by(x)^2 + f(x) = 0$$

✓ **Mathematica** : cpu = 0.119181 (sec), leaf count = 96

$$\left\{ \left\{ y(x) \rightarrow -e^{-\frac{bx}{a}} \sqrt{2 \int_1^x -\frac{f(K[1])e^{\frac{2bK[1]}}{a}}{a} dK[1] + c_1} \right\}, \left\{ y(x) \rightarrow e^{-\frac{bx}{a}} \sqrt{2 \int_1^x -\frac{f(K[1])e^{\frac{2bK[1]}}{a}}{a} dK[1] + c_1} \right\} \right.$$

✓ **Maple** : cpu = 0.042 (sec), leaf count = 104

$$\left\{ y(x) = \frac{1}{a} \sqrt{-e^{2\frac{bx}{a}} a \left(-C1 a + 2 \int \left(e^{\frac{bx}{a}} \right)^2 f(x) dx \right) \left(e^{2\frac{bx}{a}} \right)^{-1}}, y(x) = -\frac{1}{a} \sqrt{-e^{2\frac{bx}{a}} a \left(-C1 a + 2 \int \right)} \right.$$

2.231 ODE No. 231

$$y'(x)(ay(x) + bx + c) + \alpha y(x) + \beta x + \gamma = 0$$

✓ **Mathematica** : cpu = 2.54132 (sec), leaf count = 252

Solve

$$\left[(\alpha - b)^2 \left(-\log \left(\frac{(ay(x)+bx+c)^2 \left(-\frac{(\alpha(bx+c)-a(\beta x+\gamma))(a(\alpha-b)y(x)+a(\beta x+\gamma)+b^2(-x)-bc)}{(ay(x)+bx+c)^2} + a\beta - \alpha b \right)}{(\alpha(bx+c)-a(\beta x+\gamma))^2} \right) - \frac{2 \tan^{-1} \left(\frac{\frac{2(a(\beta x+\gamma))}{ay(x)}}{(\alpha-b)} \right)}{\sqrt{\frac{4(a\beta - \alpha b)}}{(\alpha-b)}} \right) \right] \frac{2(a\beta - \alpha b)}{2(a\beta - \alpha b)}$$

✓ **Maple** : cpu = 0.209 (sec), leaf count = 206

$$\left\{ y(x) = \frac{1}{-a\beta + b\alpha} \left(-b\gamma + \beta c + \frac{x(a\beta - b\alpha) + a\gamma - \alpha c}{2a} \left(\sqrt{4a\beta - \alpha^2 - 2b\alpha - b^2} \tan \left(\text{RootOf} \left(\sqrt{4a\beta - \alpha^2 - 2b\alpha - b^2} \right) \right) \right) \right. \right.$$

2.232 ODE No. 232

$$x^2 + xy(x)y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.00994446 (sec), leaf count = 56

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{2c_1 - x^4}}{\sqrt{2x}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{2c_1 - x^4}}{\sqrt{2x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.019 (sec), leaf count = 39

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

2.233 ODE No. 233

$$ax^3 \cos(x) + xy(x)y'(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0237035 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow -x \sqrt{c_1 - 2a \sin(x)} \right\}, \left\{ y(x) \rightarrow x \sqrt{c_1 - 2a \sin(x)} \right\} \right\}$$

✓ **Maple** : cpu = 0.025 (sec), leaf count = 30

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

2.234 ODE No. 234

$$x^3 - 2x^2 + xy(x)y'(x) + xy(x) - y(x)^2 = 0$$

✗ **Mathematica** : cpu = 28.9149 (sec), leaf count = 0 , could not solve

`DSolve[-2*x^2 + x^3 + x*y[x] - y[x]^2 + x*y[x]*Derivative[1][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(x*y(x)*diff(y(x),x)-y(x)^2+x*y(x)+x^3-2*x^2 = 0,y(x))`

2.235 ODE No. 235

$$(a + xy(x))y'(x) + by(x) = 0$$

✓ **Mathematica** : cpu = 0.0411103 (sec), leaf count = 40

$$\text{Solve} \left[x = c_1 e^{-\frac{y(x)}{b}} - \frac{a e^{-\frac{y(x)}{b}} \text{Ei}\left(\frac{y(x)}{b}\right)}{b}, y(x) \right]$$

✓ **Maple** : cpu = 0.051 (sec), leaf count = 30

$$\left\{ -C1 + \left(-e^{\frac{y(x)}{b}} bx + a \text{Ei}\left(1, -\frac{y(x)}{b}\right) \right)^{-1} = 0 \right\}$$

2.236 ODE No. 236

$$x(y(x) + 4)y'(x) - y(x)^2 - 2y(x) - 2x = 0$$

✓ **Mathematica** : cpu = 0.0172545 (sec), leaf count = 114

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{x \left(\frac{1}{x^2+4x} - \frac{e^{-2\left(\frac{\log_4(x)}{4} + \frac{3}{4} \log(x+4)\right)}}{\sqrt{c_1 - \frac{4}{x+4}}} \right)} - 4 \right\}, \left\{ y(x) \rightarrow \frac{1}{x \left(\frac{e^{-2\left(\frac{\log_4(x)}{4} + \frac{3}{4} \log(x+4)\right)}}{\sqrt{c_1 - \frac{4}{x+4}}} + \frac{1}{x^2+4x} \right)} - 4 \right\} \right\}$$

✓ **Maple** : cpu = 0.062 (sec), leaf count = 147

$$\left\{ y(x) = -1 \left(-(x+4)^{\frac{3}{2}} \sqrt{\frac{-C1 x + 4 - C1 - 4}{x+4}} x + 4 x^{3/2} + 16 \sqrt{x} \right) \left((x+4)^{\frac{3}{2}} \sqrt{\frac{-C1 x + 4 - C1 - 4}{x+4}} + \right.$$

2.237 ODE No. 237

$$x(a + y(x))y'(x) + by(x) + cx = 0$$

✗ **Mathematica** : cpu = 8.52493 (sec), leaf count = 0 , could not solve

DSolve[c*x + b*y[x] + x*(a + y[x])*Derivative[1][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(x*(y(x)+a)*diff(y(x),x)+b*y(x)+c*x = 0,y(x))

2.238 ODE No. 238

$$(a + x(y(x) + x))y'(x) - b - y(x)(y(x) + x) = 0$$

✓ **Mathematica** : cpu = 0.0441271 (sec), leaf count = 192

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{x \left(-\frac{x}{(a^2+ax^2+bx^2)^{3/2} \sqrt{c_1 - \frac{1}{(a+b)(a^2+ax^2+bx^2)}} - \frac{a}{-a^2-ax^2-bx^2}} \right)} - \frac{a+x^2}{x} \right\}, \left\{ y(x) \rightarrow \frac{1}{x \left(\frac{1}{(a^2+ax^2+bx^2)^{3/2} \sqrt{c_1 - \frac{1}{(a+b)(a^2+ax^2+bx^2)}} - \frac{a}{-a^2-ax^2-bx^2}} \right)} - \frac{a+x^2}{x} \right\} \right.$$

✓ **Maple** : cpu = 0.081 (sec), leaf count = 133

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

2.239 ODE No. 239

$$(xy(x) - x^2) y'(x) - 2x^2 - 3xy(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0287499 (sec), leaf count = 54

$$\left\{ \left\{ y(x) \rightarrow x - \frac{\sqrt{e^{2c_1} + 2x^4}}{x} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{e^{2c_1} + 2x^4}}{x} + x \right\} \right\}$$

✓ **Maple** : cpu = 0.155 (sec), leaf count = 59

$$\left\{ y(x) = \frac{1}{-C1 x} \left(x^2 - C1 - \sqrt{2x^4 - C1^2 + 1} \right), y(x) = \frac{1}{-C1 x} \left(x^2 - C1 + \sqrt{2x^4 - C1^2 + 1} \right) \right\}$$

2.240 ODE No. 240

$$ax + 2xy(x)y'(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0100075 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{c_1x - ax \log(x)} \right\}, \left\{ y(x) \rightarrow \sqrt{c_1x - ax \log(x)} \right\} \right\}$$

✓ **Maple** : cpu = 0.022 (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

$$ax^2 + 2xy(x)y'(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.00980399 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{c_1x - ax^2} \right\}, \left\{ y(x) \rightarrow \sqrt{c_1x - ax^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.016 (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

$$2xy(x)y'(x) + 2y(x)^2 + 1 = 0$$

✓ **Mathematica** : cpu = 0.0148757 (sec), leaf count = 60

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{e^{4c_1} - x^2}}{\sqrt{2x}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{e^{4c_1} - x^2}}{\sqrt{2x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.019 (sec), leaf count = 39

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

2.243 ODE No. 243

$$x(2y(x) + x - 1)y'(x) - y(x)(y(x) + 2x + 1) = 0$$

✓ **Mathematica** : cpu = 15.3242 (sec), leaf count = 487

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt[3]{2}x}{\sqrt[3]{-27c_1^2x^2 + \sqrt{108c_1^3x^3 + (27c_1^2x - 27c_1^2x^2)^2 + 27c_1^2x}}} + \frac{\sqrt[3]{-27c_1^2x^2 + \sqrt{108c_1^3x^3 + (27c_1^2x - 27c_1^2x^2)^2 + 27c_1^2x}}}{3\sqrt[3]{2}c_1} \right. \right.$$

✓ **Maple** : cpu = 0.131 (sec), leaf count = 493

$$\left\{ y(x) = \frac{3\sqrt[3]{5}}{40-C1} \sqrt[3]{x \left(\sqrt{5} \sqrt{\frac{80x^2-C1-160-C1x+80-C1-x}{-C1}} + 20x - 20 \right) - C1^2 + \frac{3x^{5/3}}{40} \sqrt[3]{x} \right.$$

2.244 ODE No. 244

$$x(2y(x) - x - 1)y'(x) + (-y(x) + 2x - 1)y(x) = 0$$

✓ **Mathematica** : cpu = 15.2264 (sec), leaf count = 484

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt[3]{2}x}{\sqrt[3]{27c_1^2x^2 + \sqrt{(27c_1^2x^2 + 27c_1^2x)^2 - 108c_1^3x^3 + 27c_1^2x}}} - \frac{\sqrt[3]{27c_1^2x^2 + \sqrt{(27c_1^2x^2 + 27c_1^2x)^2 - 108c_1^3x^3 + 27c_1^2x}}}{3\sqrt[3]{2}c_1} \right. \right.$$

✓ **Maple** : cpu = 0.111 (sec), leaf count = 499

$$\left\{ y(x) = \frac{3\sqrt[3]{5}}{40-C1} \sqrt[3]{x \left(\sqrt{5} \sqrt{\frac{80x^2-C1+160-C1x+80-C1-x}{-C1}} - 20x - 20 \right) - C1^2 + \frac{3x^{5/3}}{40} \sqrt[3]{x} \right.$$

2.245 ODE No. 245

$$(4x^3 + 2xy(x)) y'(x) + 112x^2y(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.409607 (sec), leaf count = 1453

$$\left\{ \left\{ y(x) \rightarrow \text{Root} \left[-1521681143169024 \#1 x^{22} - 697437190619136 \#1^2 x^{20} - 145299414712320 \#1^3 x^{18} - 18 \right] \right\} \right\}$$

✓ **Maple** : cpu = 0.296 (sec), leaf count = 31

$$\left\{ y(x) = \frac{_C1}{x^{28} (\text{RootOf} (x^{30} _Z^{360} - 24 x^{30} _Z^{330} - _C1))^{330}} \right\}$$

2.246 ODE No. 246

$$x(3y(x) + 2x)y'(x) + 3(y(x) + x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0312183 (sec), leaf count = 80

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{6} \left(-\frac{\sqrt{2}\sqrt{3e^{4c_1} - x^4}}{x} - 4x \right) \right\}, \left\{ y(x) \rightarrow \frac{1}{6} \left(\frac{\sqrt{2}\sqrt{3e^{4c_1} - x^4}}{x} - 4x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.069 (sec), leaf count = 63

$$\left\{ y(x) = \frac{1}{_C1 x} \left(-\frac{2x^2_C1}{3} - \frac{1}{6} \sqrt{-2x^4_C1^2 + 6} \right), y(x) = \frac{1}{_C1 x} \left(-\frac{2x^2_C1}{3} + \frac{1}{6} \sqrt{-2x^4_C1^2 + 6} \right) \right\}$$

2.247 ODE No. 247

$$-7x^2 + (3x + 2)(y(x) - 2x - 1)y'(x) + xy(x) - y(x)^2 - 9x - 3 = 0$$

✓ **Mathematica** : cpu = 15.2582 (sec), leaf count = 693

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{\sqrt{(-324e^{2c_1}x - 216e^{2c_1} + 1458x^3 + 2916x^2 + 1944x + 432)^2 + 4(-81x^2 - 108x - 36)^3} - 6\sqrt[3]{2}}}{6\sqrt[3]{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.2 (sec), leaf count = 517

$$\left\{ y(x) = -\frac{1}{3} + \frac{3x+2}{6} \left(7 \left(-1/4 \sqrt[3]{2(3x+2) - C1 - 27(3x+2)^3 - C1^3} + 2 \sqrt{-27(3x+2)^4 - C1^4} + \dots \right) \right) \right.$$

2.248 ODE No. 248

$$(x^2 + 6xy(x) + 3) y'(x) + 3y(x)^2 + 2xy(x) + 2x = 0$$

✓ **Mathematica** : cpu = 0.0147874 (sec), leaf count = 106

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{6c_1x - 2x^3 + \frac{1}{6}(x^2 + 3)^2} - x^2 + 3}{\sqrt{6x}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{6c_1x - 2x^3 + \frac{1}{6}(x^2 + 3)^2} - x^2 + 3}{\sqrt{6x}} \right\} \right.$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 71

$$\left\{ y(x) = \frac{1}{6x} \left(-x^2 - 3 + \sqrt{x^4 - 12x^3 - 12 - C1 x + 6x^2 + 9} \right), y(x) = -\frac{1}{6x} \left(x^2 + \sqrt{x^4 - 12x^3 - 12 - C1 x + 6x^2 + 9} \right) \right.$$

2.249 ODE No. 249

$$y'(x) (axy(x) + bx^n) + \alpha y(x)^3 + \beta y(x)^2 = 0$$

✓ **Mathematica** : cpu = 5.04689 (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 = 0.198 (sec), leaf count = 202

$$\left\{ y(x) = \beta \left(\text{RootOf} \left(-x^{1-n} - Z^{\frac{a(n-1)}{\beta}} a^2 \beta n + -C1 a^2 b n^2 + x^{1-n} - Z^{\frac{a(n-1)}{\beta}} a^2 \beta - x^{1-n} - Z^{\frac{a(n-1)}{\beta}} a \beta^2 + -Z^{\frac{a(n-1)}{\beta}} \right) \right) \right.$$

2.250 ODE No. 250

$$y'(x) (ax + Ax^2 + by(x) + Bxy(x) + c) + Axy(x) + \alpha x - By(x)^2 + \beta y(x) + \gamma = 0$$

✗ **Mathematica** : cpu = 301.369 (sec), leaf count = 0 , timed out

\$Aborted

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve((B*x*y(x)+A*x^2+a*x+b*y(x)+c)*diff(y(x),x)-B*g(x)^2+A*x*y(x)+alpha*x+beta*y(x)+

2.251 ODE No. 251

$$(x^2y(x) - 1) y'(x) + xy(x)^2 - 1 = 0$$

✓ **Mathematica** : cpu = 0.0125744 (sec), leaf count = 60

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{x^2} - \frac{\sqrt{c_1x^2 + 2x^3 + 1}}{x^2} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{c_1x^2 + 2x^3 + 1}}{x^2} + \frac{1}{x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 50

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

2.252 ODE No. 252

$$(x^2y(x) - 1) y'(x) - xy(x)^2 + 1 = 0$$

✓ **Mathematica** : cpu = 15.1407 (sec), leaf count = 819

$$\left\{ \left\{ y(x) \rightarrow \frac{6xc_1 - x}{6c_1 - 1} + \frac{\sqrt[3]{-1944c_1^2x^3 + 648c_1x^3 - 54x^3 + 1944c_1^2 - 648c_1 + \sqrt{4(54x^2c_1 - 9x^2)^3 + (-1944c_1^2 + 648c_1x^3 - 54x^3)}}{3\sqrt[3]{2}(6c_1 - 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.805 (sec), leaf count = 1623

$$\left\{ y(x) = -\frac{1}{4x^2} \left(63x^3 - 63 \frac{x^2}{-C1x^6 - 80x^6 + 160x^3 - 80} \sqrt[3]{-C1 \left(-1 + 4 \sqrt{-\frac{5x^6 - 10x^3 + 5}{-C1x^6 - 80x^6 + 160x^3 - 80}} \right)} \right) \right\}$$

2.253 ODE No. 253

$$(x^2y(x) - 1)y'(x) + 8xy(x)^2 - 8 = 0$$

✗ **Mathematica** : cpu = 19.2321 (sec), leaf count = 0 , could not solve

DSolve[-8 + 8*x*y[x]^2 + (-1 + x^2*y[x])*Derivative[1][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve((x^2*y(x)-1)*diff(y(x),x)+8*x*y(x)^2-8 = 0,y(x))

2.254 ODE No. 254

$$x^2y(x)^3 + x(xy(x) - 2)y'(x) + xy(x)^2 - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.01662 (sec), leaf count = 99

$$\left\{ \left\{ y(x) \rightarrow -\frac{2x}{\frac{\sqrt{2}\sqrt{-2x(c_1 - \log(x)) - \frac{x}{2}}}{\sqrt{-\frac{1}{x^3}}} - x^2} \right\}, \left\{ y(x) \rightarrow \frac{2x}{\frac{\sqrt{2}\sqrt{-2x(c_1 - \log(x)) - \frac{x}{2}}}{\sqrt{-\frac{1}{x^3}}} + x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.031 (sec), leaf count = 59

$$\left\{ y(x) = -\frac{1}{(2 \ln(x) - 2_C1)x} \left(-1 + \sqrt{1 - 4 \ln(x) + 4_C1}\right), y(x) = \frac{1}{(2 \ln(x) - 2_C1)x} \left(1 + \sqrt{1 - 4 \ln(x) + 4_C1}\right) \right\}$$

2.255 ODE No. 255

$$x(xy(x) - 3)y'(x) + xy(x)^2 - y(x) = 0$$

✓ **Mathematica** : cpu = 4.97154 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow -\frac{3W\left(e^{\frac{9c_1}{2^{2/3}} - 1} x^{2/3}\right)}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.207 (sec), leaf count = 74

$$\left\{ y(x) = -3 \frac{\text{lambertW}\left(2/3 \sqrt[3]{-1/8 x^2 - C1}\right)}{x}, y(x) = -3 \frac{\text{lambertW}\left(1/3 \sqrt[3]{-1/8 x^2 - C1} (i\sqrt{3} - 1)\right)}{x}, y(x) = -3 \frac{\text{lambertW}\left(1/3 \sqrt[3]{-1/8 x^2 - C1} (-i\sqrt{3} - 1)\right)}{x} \right\}$$

2.256 ODE No. 256

$$x^2(y(x) - 1)y'(x) + (x - 1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0196089 (sec), leaf count = 21

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

✓ **Maple** : cpu = 0.048 (sec), leaf count = 33

$$\left\{ y(x) = e^{-\frac{\text{lambertW}\left(-xe^{-C1+x^{-1}}\right)_{x-x\ln(x)-C1\ x-1}}{x}} \right\}$$

2.257 ODE No. 257

$$x(x^4 + xy(x) - 1)y'(x) - y(x)(-x^4 + xy(x) - 1) = 0$$

✓ **Mathematica** : cpu = 0.365122 (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 = 0.115 (sec), leaf count = 98

$$\left\{ y(x) = \frac{-C1 + e^{\text{RootOf}\left(-2_Z x^4(e^{-Z})^2 + 2x^4(e^{-Z})^2 - 2e^{-Z}C1 x^4 + (e^{-Z})^2 - 2e^{-Z}C1 + C1^2\right)}}{x e^{\text{RootOf}\left(-2_Z x^4(e^{-Z})^2 + 2x^4(e^{-Z})^2 - 2e^{-Z}C1 x^4 + (e^{-Z})^2 - 2e^{-Z}C1 + C1^2\right)}} \right\}$$

2.258 ODE No. 258

$$-2x^3 + 2x^2y(x)y'(x) - x^2 + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0135929 (sec), leaf count = 43

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

✓ **Maple** : cpu = 0.023 (sec), leaf count = 33

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

2.259 ODE No. 259

$$2x^2y(x)y'(x) - e^{x-\frac{1}{x}}x^2 - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.019616 (sec), leaf count = 50

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

✓ **Maple** : cpu = 0.027 (sec), leaf count = 51

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

2.260 ODE No. 260

$$(2x^2y(x) + x) y'(x) - x^2y(x)^3 + 2xy(x)^2 + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0148652 (sec), leaf count = 80

$$\left\{ \left\{ y(x) \rightarrow \frac{x}{\frac{\sqrt{x(c_1 - 2 \log(x) + 4x)}}{\sqrt{\frac{1}{x^3}}} - 2x^2} \right\}, \left\{ y(x) \rightarrow -\frac{x}{\frac{\sqrt{x(c_1 - 2 \log(x) + 4x)}}{\sqrt{\frac{1}{x^3}}} + 2x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 59

$$\left\{ y(x) = \frac{1}{(2 \ln(x) - 2 - C1) x} \left(-2 + \sqrt{4 - 2 \ln(x) + 2 - C1} \right), y(x) = -\frac{1}{(2 \ln(x) - 2 - C1) x} \left(2 + \sqrt{4 - 2 \ln(x) + 2 - C1} \right) \right\}$$

2.261 ODE No. 261

$$(2x^2y(x) - x) y'(x) - 2xy(x)^2 - y(x) = 0$$

✓ **Mathematica** : cpu = 0.915288 (sec), leaf count = 32

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{2xW\left(\frac{e^{\frac{9c_1}{2^{2/3}} - 1}}{x^2}\right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.112 (sec), leaf count = 18

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

2.262 ODE No. 262

$$2x^3 + (2x^2y(x) - x^3) y'(x) - 4xy(x)^2 + y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.0674344 (sec), leaf count = 101

$$\left\{ \left\{ y(x) \rightarrow \frac{2x^3 - \sqrt{e^{4c_1}x^2 - 3e^{2c_1}x^4}}{e^{2c_1} + x^2} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{e^{4c_1}x^2 - 3e^{2c_1}x^4} + 2x^3}{e^{2c_1} + x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.292 (sec), leaf count = 74

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

2.263 ODE No. 263

$$2x^3 + 3x^2y(x)^2 + y(x)y'(x) + 7 = 0$$

✓ **Mathematica** : cpu = 0.0406005 (sec), leaf count = 121

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{c_1 e^{-2x^3} + \frac{20 \cdot 2^{2/3} e^{-2x^3} x \Gamma\left(\frac{1}{3}, -2x^3\right)}{9 \sqrt[3]{-x^3}} - \frac{2x}{3}} \right\}, \left\{ y(x) \rightarrow \sqrt{c_1 e^{-2x^3} + \frac{20 \cdot 2^{2/3} e^{-2x^3} x \Gamma\left(\frac{1}{3}, -2x^3\right)}{9 \sqrt[3]{-x^3}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.147 (sec), leaf count = 207

$$\left\{ y(x) = -\frac{2^{\frac{2}{3}}}{18 \Gamma(2/3)} \sqrt{-3 \sqrt[3]{2} \Gamma(2/3) \sqrt[3]{-x^3} \left(-27 e^{-2x^3} - C1 \Gamma(2/3) \sqrt[3]{2} \sqrt[3]{-x^3} + 80 e^{-2x^3} x \pi \sqrt{3} + 18 x \Gamma(2/3) \right)} \right\}$$

2.264 ODE No. 264

$$2x(x^3y(x) + 1)y'(x) + y(x)(3x^3y(x) - 1) = 0$$

✓ **Mathematica** : cpu = 0.362583 (sec), leaf count = 680

$$\left\{ \left\{ y(x) \rightarrow \text{Root} \left[81\#1^7 e^{\frac{21c_1}{2}} x^{12} + 756\#1^6 e^{\frac{21c_1}{2}} x^9 + 2646\#1^5 e^{\frac{21c_1}{2}} x^6 + 4116\#1^4 e^{\frac{21c_1}{2}} x^3 + 2401\#1^3 e^{\frac{21c_1}{2}} - \right. \right. \right.$$

✓ **Maple** : cpu = 0.534 (sec), leaf count = 574

$$\left\{ y(x) = \frac{-40353607 (\text{RootOf}(9x^7Z^{98} - 49C1Z^{42} + 14C1Z^{21} - C1))^{91} C1 + 756315 (\text{RootOf}(9x^7Z^{98} - 49C1Z^{42} + 14C1Z^{21} - C1))^{91} C1}{3x^3 (\text{RootOf}(9x^7Z^{98} - 49C1Z^{42} + 14C1Z^{21} - C1))^7 (5764801C1 (\text{RootOf}(9x^7Z^{98} - 49C1Z^{42} + 14C1Z^{21} - C1))^{91} C1)}$$

2.265 ODE No. 265

$$2(n+1)^2x^{n-1}(x^{n^2}y(x)^2 - 1) + (x^{n(n+1)}y(x) - 1)y'(x) = 0$$

✗ **Mathematica** : cpu = 300.044 (sec), leaf count = 0 , timed out

\$Aborted

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve((x^(n*(n+1))*y(x)-1)*diff(y(x),x)+2*(n+1)^2*x^(n-1)*(x^(n^2)*y(x)^2-1) = 0,y(x))

2.266 ODE No. 266

$$\sqrt{x^2 + 1}(y(x) - x)y'(x) - a\sqrt{(y(x)^2 + 1)^3} = 0$$

✗ **Mathematica** : cpu = 300.046 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 1.622 (sec), leaf count = 60

$$\left\{ y(x) = \tan \left(\text{RootOf} \left(-\arctan(x) + \int^{-\arctan(x)+Z} \frac{1}{2a^2 + \cos(2_a) - 1} \left(-\cos(2_a) + 1 + \sqrt{-2a^2} \right) \right. \right. \right.$$

2.267 ODE No. 267

$$y(x) \sin^2(x)y'(x) + y(x)^2 \sin(x) \cos(x) - 1 = 0$$

✓ **Mathematica** : cpu = 0.0385197 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{c_1 + 2x} \csc(x) \right\}, \left\{ y(x) \rightarrow \sqrt{c_1 + 2x} \csc(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 32

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

2.268 ODE No. 268

$$f(x)y(x)y'(x) + g(x)y(x)^2 + h(x) = 0$$

✓ **Mathematica** : cpu = 1.03275 (sec), leaf count = 140

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

✓ **Maple** : cpu = 0.079 (sec), leaf count = 124

$$\left\{ y(x) = 1 \sqrt{-e^{2 \int \frac{g(x)}{f(x)} dx} \left(2 \int \frac{h(x)}{f(x)} \left(e^{\int \frac{g(x)}{f(x)} dx} \right)^2 dx - _C1 \right) \left(e^{2 \int \frac{g(x)}{f(x)} dx} \right)^{-1}}, y(x) = -1 \sqrt{-e^{2 \int \frac{g(x)}{f(x)} dx} \left(2 \int \frac{h(x)}{f(x)} \left(e^{\int \frac{g(x)}{f(x)} dx} \right)^2 dx - _C1 \right) \left(e^{2 \int \frac{g(x)}{f(x)} dx} \right)^{-1}} \right\}$$

2.269 ODE No. 269

$$-f_0(x) - f_1(x)y(x) - f_2(x)y(x)^2 - f_3(x)y(x)^3 + y'(x)(g_0(x) + g_1(x)y(x)) = 0$$

✗ **Mathematica** : cpu = 361.961 (sec), leaf count = 0 , timed out

\$Aborted

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve((g1(x)*y(x)+g0(x))*diff(y(x),x)-f1(x)*y(x)-f2(x)*y(x)^2-f3(x)*y(x)^3-f0(x) = 0,y(x))`

2.270 ODE No. 270

$$x^2 + (y(x)^2 - x) y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 16.1169 (sec), leaf count = 327

$$\left\{ \left\{ y(x) \rightarrow -\frac{3\sqrt[3]{2}x}{\sqrt[3]{\sqrt{(81c_1 + 27x^3)^2 - 2916x^3 + 81c_1 + 27x^3}}} - \frac{\sqrt[3]{\sqrt{(81c_1 + 27x^3)^2 - 2916x^3 + 81c_1 + 27x^3}}}{3\sqrt[3]{2}} \right. \right.$$

✓ **Maple** : cpu = 0.024 (sec), leaf count = 402

$$\left\{ y(x) = \frac{1}{2} \sqrt[3]{-4x^3 - 12_C1 + 4\sqrt{x^6 + 6x^3_C1 - 4x^3 + 9_C1^2}} + 2 \frac{x}{\sqrt[3]{-4x^3 - 12_C1 + 4\sqrt{x^6 + 6x^3_C1 - 4x^3 + 9_C1^2}}} \right.$$

2.271 ODE No. 271

$$(x^2 + y(x)^2) y'(x) + 2x(y(x) + 2x) = 0$$

✓ **Mathematica** : cpu = 1.53613 (sec), leaf count = 370

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{\sqrt{-8e^{3c_1}x^3 + e^{6c_1} + 20x^6 + e^{3c_1} - 4x^3}}}{\sqrt[3]{2}} - \frac{\sqrt[3]{2}x^2}{\sqrt[3]{\sqrt{-8e^{3c_1}x^3 + e^{6c_1} + 20x^6 + e^{3c_1} - 4x^3}}} \right. \right\}, \left\{ y(x) \right.$$

✓ **Maple** : cpu = 0.166 (sec), leaf count = 417

$$\left\{ y(x) = 1 \left(\frac{1}{2} \sqrt[3]{4 - 16x^3_C1^{3/2} + 4\sqrt{20_C1^3x^6 - 8x^3_C1^{3/2} + 1}} - 2 \frac{x^2_C1}{\sqrt[3]{4 - 16x^3_C1^{3/2} + 4\sqrt{20_C1^3x^6 - 8x^3_C1^{3/2} + 1}}} \right) \right.$$

2.272 ODE No. 272

$$(x^2 + y(x)^2) y'(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 3.3185 (sec), leaf count = 42

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

✓ **Maple** : cpu = 0.142 (sec), leaf count = 43

$$\left\{ y(x) = e^{\frac{2\sqrt{3}}{3} \text{RootOf}(-\sqrt{3}xe^{-C1} + 3 \tan(_Z)xe^{-C1} + 2\sqrt{3}e^{2/3\sqrt{3}_Z}) - _C1} \right\}$$

2.273 ODE No. 273

$$(a + x^2 + y(x)^2) y'(x) + 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.832519 (sec), leaf count = 297

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{\sqrt{2916(a+x^2)^3 + 6561c_1^2 + 81c_1}}}{3\sqrt[3]{2}} - \frac{3\sqrt[3]{2}(a+x^2)}{\sqrt[3]{\sqrt{2916(a+x^2)^3 + 6561c_1^2 + 81c_1}}} \right\}, \left\{ y(x) \rightarrow \frac{x^2 + a}{2\sqrt[3]{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.025 (sec), leaf count = 470

$$\left\{ y(x) = \frac{1}{2} \sqrt[3]{-12_C1 + 4\sqrt{4x^6 + 12ax^4 + 12a^2x^2 + 4a^3 + 9_C1^2}} - 2 \frac{x^2 + a}{\sqrt[3]{-12_C1 + 4\sqrt{4x^6 + 12ax^4 + 12a^2x^2 + 4a^3 + 9_C1^2}}} \right\}$$

2.274 ODE No. 274

$$(a + x^2 + y(x)^2) y'(x) + b + x^2 + 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0567879 (sec), leaf count = 411

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{\sqrt{2916(a+x^2)^3 + (-81bx + 81c_1 - 27x^3)^2} - 81bx + 81c_1 - 27x^3}}{3\sqrt[3]{2}} - \frac{\sqrt[3]{\sqrt{2916(a+x^2)^3 - \dots}}}{\dots} \right\} \right.$$

✓ **Maple** : cpu = 0.031 (sec), leaf count = 810

$$\left\{ y(x) = \frac{1}{2} \sqrt[3]{-4x^3 - 12bx - 12C_1 + 4\sqrt{5x^6 + 12ax^4 + 6x^4b + 6x^3C_1 + 12a^2x^2 + 9b^2x^2 + 18bx - \dots}} \right.$$

2.275 ODE No. 275

$$(x^2 + y(x)^2 + x) y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.470104 (sec), leaf count = 18

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

✓ **Maple** : cpu = 0.092 (sec), leaf count = 30

$$\left\{ -C_1 + \frac{e^{-2iy(x)}(ix + y(x))}{2iy(x) + 2x} = 0 \right\}$$

2.276 ODE No. 276

$$(y(x)^2 - x^2) y'(x) + 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0422363 (sec), leaf count = 61

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

✓ **Maple** : cpu = 0.065 (sec), leaf count = 45

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

2.277 ODE No. 277

$$(x^4 + y(x)^2) y'(x) - 4x^3 y(x) = 0$$

✓ **Mathematica** : cpu = 0.015045 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(c_1 - \sqrt{c_1^2 + 4x^4} \right) \right\}, \left\{ y(x) \rightarrow \frac{1}{2} \left(\sqrt{c_1^2 + 4x^4} + c_1 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.315 (sec), leaf count = 67

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

2.278 ODE No. 278

$$y'(x) (y(x)^2 + 4 \sin(x)) - \cos(x) = 0$$

✓ **Mathematica** : cpu = 0.528786 (sec), leaf count = 39

$$\text{Solve} \left[-\frac{1}{32} e^{-4y(x)} (8y(x)^2 + 4y(x) + 1) - e^{-4y(x)} \sin(x) = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.06 (sec), leaf count = 33

$$\left\{ -e^{-4y(x)} \sin(x) - \frac{(8(y(x))^2 + 4y(x) + 1) e^{-4y(x)}}{32} + _C1 = 0 \right\}$$

2.279 ODE No. 279

$$(y(x)^2 + 2y(x) + x) y'(x) + y(x)^2(y(x) + x)^2 + y(x)(y(x) + 1) = 0$$

✓ **Mathematica** : cpu = 11.4383 (sec), leaf count = 107

$$\left\{ \left\{ y(x) \rightarrow \frac{-\sqrt{(-c_1 x + x^2 - 1)^2 + 4(x - c_1)} + c_1 x - x^2 + 1}{2(x - c_1)} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{(-c_1 x + x^2 - 1)^2 + 4(x - c_1)}}{2(x - c_1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.19 (sec), leaf count = 120

$$\left\{ y(x) = \frac{1}{2_C1 - 4x} \left(-_C1 x + 2x^2 - 2 + \sqrt{-_C1^2 x^2 - 4x^3 -_C1 + 4x^4 + 4_C1 x - 8x^2 - 8_C1 +} \right) \right\}$$

2.280 ODE No. 280

$$(y(x) + x)^2 y'(x) - a^2 = 0$$

✓ **Mathematica** : cpu = 0.0420939 (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 = 0.055 (sec), leaf count = 24

$$\{y(x) = a \text{RootOf}(\tan(_Z) a - _Z a + _C1 - x) - _C1\}$$

2.281 ODE No. 281

$$(-x^2 + 2xy(x) + y(x)^2) y'(x) + x^2 + 2xy(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0746932 (sec), leaf count = 75

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

✓ **Maple** : cpu = 0.07 (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

$$(y(x) + 3x - 1)^2 y'(x) - (2y(x) - 1)(4y(x) + 6x - 3) = 0$$

✓ **Mathematica** : cpu = 0.21184 (sec), leaf count = 2129

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{6}(12x + 4e^{c_1} + 1) - \frac{1}{6} \sqrt{36x^2 + 96e^{c_1}x - 12x - 16e^{c_1} + 16e^{2c_1} + 3 \cdot 2^{2/3} \sqrt[3]{-7776e^{c_1}x^5 + 6480e^{2c_1}x^3 - 1296e^{c_1}x - 1296e^{2c_1}}} \right. \right.$$

✓ **Maple** : cpu = 0.228 (sec), leaf count = 72

$$\left\{ 3 \ln \left(\frac{-6y(x) + 3}{6x - 1} \right) - 3 \ln \left(\frac{-6y(x) + 18x}{6x - 1} \right) - \ln \left(-\frac{6y(x) - 4 + 6x}{6x - 1} \right) - \ln(6x - 1) - C_1 = 0 \right\}$$

2.283 ODE No. 283

$$3(y(x)^2 - x^2) y'(x) + 2y(x)^3 - 6x(x + 1)y(x) - 3e^x = 0$$

✓ **Mathematica** : cpu = 0.159563 (sec), leaf count = 477

$$\left\{ \left\{ y(x) \rightarrow -\frac{e^{-2x} \sqrt[3]{\sqrt{(27c_1 e^{4x} - 27e^{7x})^2 - 2916e^{12x}x^6 + 27c_1 e^{4x} - 27e^{7x}}}}{3\sqrt[3]{2}} - \frac{3\sqrt[3]{2}}{\sqrt[3]{\sqrt{(27c_1 e^{4x} - 27e^{7x})^2 - 2916e^{12x}x^6 + 27c_1 e^{4x} - 27e^{7x}}}} \right. \right.$$

✓ **Maple** : cpu = 0.069 (sec), leaf count = 622

$$\left\{ y(x) = \frac{1}{2e^{2x}} \sqrt[3]{\left(4e^{3x} - 4C_1 + 4\sqrt{-4x^6(e^{2x})^2 + (e^{3x})^2 - 2e^{3x}C_1 + C_1^2} \right) (e^{2x})^2} + 2 \frac{\sqrt[3]{\left(4e^{3x} - 4C_1 + 4\sqrt{-4x^6(e^{2x})^2 + (e^{3x})^2 - 2e^{3x}C_1 + C_1^2} \right) (e^{2x})^2}}{\sqrt[3]{4e^{3x}}} \right.$$

2.284 ODE No. 284

$$(x^2 + 4y(x)^2) y'(x) - xy(x) = 0$$

✓ **Mathematica** : cpu = 0.126914 (sec), leaf count = 59

$$\left\{ \left\{ y(x) \rightarrow -\frac{x}{2\sqrt{W\left(\frac{1}{4}e^{-\frac{c_1}{2}}x^2\right)}} \right\}, \left\{ y(x) \rightarrow \frac{x}{2\sqrt{W\left(\frac{1}{4}e^{-\frac{c_1}{2}}x^2\right)}} \right\} \right\}$$

✓ **Maple** : cpu = 0.135 (sec), leaf count = 21

$$\left\{ y(x) = e^{\frac{1}{2}\text{lambertW}\left(\frac{(e^{-C1})^2x^2}{4}\right) - C1} \right\}$$

2.285 ODE No. 285

$$(3x^2 + 2xy(x) + 4y(x)^2) y'(x) + 2x^2 + 6xy(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.060572 (sec), leaf count = 402

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{\sqrt{(432e^{3c_1} + 54x^3)^2 + 3881196x^6 + 432e^{3c_1} + 54x^3}}}{12\sqrt[3]{2}} - \frac{33x^2}{2 \cdot 2^{2/3} \sqrt[3]{\sqrt{(432e^{3c_1} + 54x^3)^2 + 3881196x^6 + 432e^{3c_1} + 54x^3}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.159 (sec), leaf count = 431

$$\left\{ y(x) = \frac{1}{-C1} \left(\frac{1}{4} \sqrt[3]{x^3 - C1^3 + 8 + 2\sqrt{333 - C1^6x^6 + 4x^3 - C1^3 + 16}} - \frac{11 - C1^2x^2}{4} \frac{1}{\sqrt[3]{x^3 - C1^3 + 8 + 2\sqrt{333 - C1^6x^6 + 4x^3 - C1^3 + 16}}} \right) \right\}$$

2.286 ODE No. 286

$$(2y(x) - 3x + 1)^2 y'(x) - (3y(x) - 2x - 4)^2 = 0$$

✓ **Mathematica** : cpu = 0.43029 (sec), leaf count = 3501

✓ **Maple** : cpu = 1.698 (sec), leaf count = 1335

$$\left\{ y(x) = \frac{14}{5} + \frac{(5x - 11) \left(\text{RootOf}((115330078125_C1 x^9 - 2283535546875_C1 x^8 + 20095112812500_C1 x^7 - 2283535546875_C1 x^6 + 20095112812500_C1 x^5 - 2283535546875_C1 x^4 + 20095112812500_C1 x^3 - 2283535546875_C1 x^2 + 20095112812500_C1 x - 2283535546875_C1)) \right)}{5 \left(\text{RootOf}((115330078125_C1 x^9 - 2283535546875_C1 x^8 + 20095112812500_C1 x^7 - 2283535546875_C1 x^6 + 20095112812500_C1 x^5 - 2283535546875_C1 x^4 + 20095112812500_C1 x^3 - 2283535546875_C1 x^2 + 20095112812500_C1 x - 2283535546875_C1)) \right)} \right.$$

2.287 ODE No. 287

$$(2y(x) - 4x + 1)^2 y'(x) - (y(x) - 2x)^2 = 0$$

✓ **Mathematica** : cpu = 1.36552 (sec), leaf count = 77

Solve $\left[\frac{y(x)}{2} + \frac{1}{196} \left(14y(x) - (8 - 9\sqrt{2}) \log(-7y(x) + 14x + \sqrt{2} - 4) - (8 + 9\sqrt{2}) \log(7y(x) - 14x + \sqrt{2} - 4) \right) \right]$

✓ **Maple** : cpu = 0.079 (sec), leaf count = 56

$$\left\{ -\frac{x}{7} + \frac{4y(x)}{7} - \frac{2 \ln(7(y(x) - 2x)^2 + 8y(x) - 16x + 2)}{49} - \frac{9\sqrt{2}}{98} \text{Artanh}\left(\frac{(14y(x) - 28x + 8)\sqrt{2}}{4}\right) \right\}$$

2.288 ODE No. 288

$$(-3x^2 y(x) + 6y(x)^2 + 1) y'(x) - 3xy(x)^2 + x = 0$$

✓ **Mathematica** : cpu = 0.027246 (sec), leaf count = 534

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt[3]{4\sqrt{3}\sqrt{-54c_1x^6 + 648c_1x^2 + 432c_1^2 - 27x^8 + 207x^4 + 32} + 144c_1 - 9x^6 + 108x^2}}{4 \cdot 3^{2/3}} + \frac{1}{3\sqrt[3]{3^3}} \right\} \right.$$

✓ **Maple** : cpu = 0.043 (sec), leaf count = 587

$$\left\{ y(x) = \frac{1}{12} \sqrt[3]{-324 x^2 - 432 _C1 + 27 x^6 + 12 \sqrt{-81 x^8 - 162 _C1 x^6 + 621 x^4 + 1944 x^2 _C1 + 1296 _C1}} \right.$$

2.289 ODE No. 289

$$a + (6y(x) - x)^2 y'(x) - 6y(x)^2 + 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0188803 (sec), leaf count = 115

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{6} \left(\sqrt[3]{-18ax + 18c_1 - x^3} + x \right) \right\}, \left\{ y(x) \rightarrow \frac{x}{6} - \frac{1}{12} (1 - i\sqrt{3}) \sqrt[3]{-18ax + 18c_1 - x^3} \right\}, \left\{ y(x) \right.$$

✓ **Maple** : cpu = 0.035 (sec), leaf count = 115

$$\left\{ y(x) = \frac{1}{6} \sqrt[3]{-x^3 - 18 ax - 18 _C1} + \frac{x}{6}, y(x) = -\frac{1}{12} \sqrt[3]{-x^3 - 18 ax - 18 _C1} - \frac{i}{12} \sqrt{3} \sqrt[3]{-x^3 - 18 ax - 18 _C1} \right.$$

2.290 ODE No. 290

$$y'(x) (ay(x)^2 + 2bxy(x) + cx^2) + by(x)^2 + 2cxy(x) + dx^2 = 0$$

✓ **Mathematica** : cpu = 0.0925112 (sec), leaf count = 831

$$\left\{ \left\{ y(x) \rightarrow -\frac{bx}{a} + \frac{\sqrt[3]{-54b^3x^3 + 81abcx^3 - 27a^2dx^3 + 27a^2e^{3c_1} + \sqrt{4(9acx^2 - 9b^2x^2)^3 + (-54b^3x^3 + 81abcx^3 - 27a^2dx^3 + 27a^2e^{3c_1})^2}}}{3\sqrt[3]{2a}} \right\} \right.$$

✓ **Maple** : cpu = 0.18 (sec), leaf count = 1666

$$\left\{ y(x) = \frac{1}{_C1} \left(\frac{1}{2a} \sqrt[3]{-4 _C1^3 a^2 dx^3 + 12 cx^3 _C1^3 ba - 8 b^3 x^3 _C1^3 + 4 \sqrt{_C1^6 a^2 d^2 x^6 - 6 _C1^6 abc dx^3}} \right) \right.$$

2.291 ODE No. 291

$$y'(x) (b(\alpha x + \beta y(x))^2 - \beta(ax + by(x))) - \alpha(ax + by(x)) + a(\alpha x + \beta y(x))^2 = 0$$

✓ **Mathematica** : cpu = 0.693658 (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 = 0.165 (sec), leaf count = 50

$$\left\{ y(x) = \frac{-ax + e^{\text{RootOf}(-C1 a\beta x - C1 \alpha bx - Z a\beta x + Z \alpha bx - C1 \beta e^{-Z} + e^{-Z} Z \beta + b)}}{b} \right\}$$

2.292 ODE No. 292

$$y'(x)(ay(x) + bx + c)^2 + (\alpha y(x) + \beta x + \gamma)^2 = 0$$

✓ **Mathematica** : cpu = 62.3396 (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 = 0.049 (sec), leaf count = 124

$$\left\{ y(x) = \frac{1}{-a\beta + b\alpha} \left(-\gamma b + \beta c + \text{RootOf} \left(\int^{-Z} \frac{-a^2 a^2 - 2_a ab + b^2}{-a^3 a^2 - 2_a^2 ab - a^2 \alpha^2 + 2_a \alpha \beta + a b^2 - \beta^2} d_a \right) \right. \right.$$

2.293 ODE No. 293

$$x(y(x)^2 - 3x) y'(x) + 2y(x)^3 - 5xy(x) = 0$$

✓ **Mathematica** : cpu = 0.101178 (sec), leaf count = 661

$$\left\{ \left\{ y(x) \rightarrow \text{Root} \left[-\#1^{15} - \frac{25\#1^2 e^{\frac{65c_1}{2}}}{x^{26}} + \frac{65e^{\frac{65c_1}{2}}}{x^{25}} \&, 1 \right] \right\}, \left\{ y(x) \rightarrow \text{Root} \left[-\#1^{15} - \frac{25\#1^2 e^{\frac{65c_1}{2}}}{x^{26}} + \frac{65e^{\frac{65c_1}{2}}}{x^{25}} \right] \right\} \right.$$

✓ **Maple** : cpu = 0.321 (sec), leaf count = 36

$$\left\{ \ln(x) - C1 - \frac{2}{65} \ln \left(-\frac{5(y(x))^2 + 13x}{x} \right) + \frac{6}{13} \ln \left(y(x) \frac{1}{\sqrt{x}} \right) = 0 \right\}$$

2.294 ODE No. 294

$$x(-a + x^2 + y(x)^2) y'(x) - y(x)(a + x^2 + y(x)^2) = 0$$

✓ **Mathematica** : cpu = 0.0546603 (sec), leaf count = 71

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

✓ **Maple** : cpu = 0.095 (sec), leaf count = 112

$$\left\{ \left((y(x))^{-2} - (-x^2 + a)^{-1} \right)^{-1} = -x\sqrt{x^2 - a} \frac{1}{\sqrt{-C1 + 4 \frac{a}{x^2 - a}}} + \frac{x^2}{2} - \frac{a}{2}, \left((y(x))^{-2} - (-x^2 + a)^{-1} \right)^{-1} = \right.$$

2.295 ODE No. 295

$$x(-x^2 + xy(x) + y(x)^2) y'(x) + x^2 y(x) - y(x)^3 + xy(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0369703 (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 = 0.202 (sec), leaf count = 29

$$\left\{ y(x) = e^{\text{RootOf}((e^{-z})^2 + 2e^{-z} \ln(x) + 2e^{-z} - C1 + -z e^{-z} + 1)} x \right\}$$

2.296 ODE No. 296

$$x^4 + x(x^2 y(x) + x^2 + y(x)^2) y'(x) - 2x^2 y(x)^2 - 2y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.620665 (sec), leaf count = 102

$$\left\{ \left\{ y(x) \rightarrow -e^{-c_1} x^2 - e^{-c_1} \sqrt{-e^{c_1} x^4 + e^{2c_1} x^2 + x^4} \right\}, \left\{ y(x) \rightarrow e^{-c_1} \sqrt{-e^{c_1} x^4 + e^{2c_1} x^2 + x^4} - e^{-c_1} x^2 \right\} \right\}$$

✓ **Maple** : cpu = 0.73 (sec), leaf count = 165

$$\left\{ y(x) = -x^3(x - 2) \left(\frac{1}{x^2(x - 2)} \left(-C1 x - x^2 - \sqrt{-C1 x^4 - C1^2 x^2 + x^4} \right) - 1 \right) \left(-C1 x - x^2 - \sqrt{-C1 x^4 - C1^2 x^2 + x^4} \right) \right\}$$

2.297 ODE No. 297

$$2x(5x^2 + y(x)^2) y'(x) - x^2 y(x) + y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.0623009 (sec), leaf count = 216

$$\left\{ \left\{ y(x) \rightarrow \text{Root} \left[-\#1^5 + \frac{\#1^2 e^{3c_1}}{x^{3/2}} + 3e^{3c_1} \sqrt{x} \&, 1 \right] \right\}, \left\{ y(x) \rightarrow \text{Root} \left[-\#1^5 + \frac{\#1^2 e^{3c_1}}{x^{3/2}} + 3e^{3c_1} \sqrt{x} \&, 2 \right] \right\} \right\}$$

✓ **Maple** : cpu = 0.296 (sec), leaf count = 29

$$\left\{ y(x) = (\text{RootOf}(x^9 _C1 _Z^{45} - _Z^{18} - 6 _Z^9 - 9))^{9/2} x \right\}$$

2.298 ODE No. 298

$$3xy(x)^2 y'(x) + y(x)^3 - 2x = 0$$

✓ **Mathematica** : cpu = 0.00994894 (sec), leaf count = 72

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{c_1 + x^2}}{\sqrt[3]{x}} \right\}, \left\{ y(x) \rightarrow -\frac{\sqrt[3]{-1} \sqrt[3]{c_1 + x^2}}{\sqrt[3]{x}} \right\}, \left\{ y(x) \rightarrow \frac{(-1)^{2/3} \sqrt[3]{c_1 + x^2}}{\sqrt[3]{x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.02 (sec), leaf count = 99

$$\left\{ y(x) = \frac{1}{x} \sqrt[3]{(x^2 + _C1) x^2}, y(x) = -\frac{1}{2x} \sqrt[3]{(x^2 + _C1) x^2} - \frac{i\sqrt{3}}{x} \sqrt[3]{(x^2 + _C1) x^2}, y(x) = -\frac{1}{2x} \sqrt[3]{(x^2 + _C1) x^2} + \frac{i\sqrt{3}}{x} \sqrt[3]{(x^2 + _C1) x^2} \right\}$$

2.299 ODE No. 299

$$(3xy(x)^2 - x^2) y'(x) + y(x)^3 - 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0258419 (sec), leaf count = 371

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt[3]{\frac{2}{3}x^2}}{\sqrt[3]{9c_1x^2 + \sqrt{3}\sqrt{27c_1^2x^4 - 4x^9}}} - \frac{\sqrt[3]{9c_1x^2 + \sqrt{3}\sqrt{27c_1^2x^4 - 4x^9}}}{\sqrt[3]{23^{2/3}x}} \right\}, \left\{ y(x) \rightarrow \frac{(1 - \sqrt{3}) \sqrt[3]{9c_1x^2 + \sqrt{3}\sqrt{27c_1^2x^4 - 4x^9}}}{2^{2/3} \sqrt[3]{3} \sqrt[3]{9c_1x^2 + \sqrt{3}\sqrt{27c_1^2x^4 - 4x^9}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.167 (sec), leaf count = 327

$$\left\{ y(x) = \frac{1}{6x} \sqrt[3]{\left(12 \sqrt{-12x^5 + 81_C1^2 + 108_C1}\right) x^2 + 2 \frac{x^2}{\sqrt[3]{\left(12 \sqrt{-12x^5 + 81_C1^2 + 108_C1}\right) x^2}}}, \right.$$

2.300 ODE No. 300

$$6xy(x)^2y'(x) + 2y(x)^3 + x = 0$$

✓ **Mathematica** : cpu = 0.0771513 (sec), leaf count = 99

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{4c_1 - x^2}}{2^{2/3}\sqrt[3]{x}} \right\}, \left\{ y(x) \rightarrow -\frac{\sqrt[3]{-1}\sqrt[3]{4c_1 - x^2}}{2^{2/3}\sqrt[3]{x}} \right\}, \left\{ y(x) \rightarrow \frac{(-1)^{2/3}\sqrt[3]{4c_1 - x^2}}{2^{2/3}\sqrt[3]{x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.021 (sec), leaf count = 120

$$\left\{ y(x) = \frac{1}{2x} \sqrt[3]{(-2x^2 + 8_C1)x^2}, y(x) = -\frac{1}{4x} \sqrt[3]{(-2x^2 + 8_C1)x^2} - \frac{i\sqrt[3]{3}}{x} \sqrt[3]{(-2x^2 + 8_C1)x^2}, y(x) \right.$$

2.301 ODE No. 301

$$(x^2 + 6xy(x)^2)y'(x) - y(x)(3y(x)^2 - x) = 0$$

✓ **Mathematica** : cpu = 0.0932238 (sec), leaf count = 64

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{x}\sqrt{W\left(\frac{6e^{3c_1}}{x^3}\right)}}{\sqrt{6}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{x}\sqrt{W\left(\frac{6e^{3c_1}}{x^3}\right)}}{\sqrt{6}} \right\} \right\}$$

✓ **Maple** : cpu = 0.188 (sec), leaf count = 25

$$\left\{ y(x) = \frac{1}{x} e^{-\frac{1}{2}\text{lambertW}\left(6\frac{e^3 - C1}{x^3}\right) + \frac{3 - C1}{2}} \right\}$$

2.302 ODE No. 302

$$(x^2y(x)^2 + x)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0234049 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1x - \sqrt{x}\sqrt{c_1^2x + 4}}{2x} \right\}, \left\{ y(x) \rightarrow \frac{c_1x + \sqrt{x}\sqrt{c_1^2x + 4}}{2x} \right\} \right\}$$

✓ **Maple** : cpu = 0.141 (sec), leaf count = 137

$$\left\{ y(x) = -\frac{1}{2_C1 x} \sqrt{-2x_C1 (-2_C1 - x + \sqrt{4_C1 x + x^2})}, y(x) = \frac{1}{2_C1 x} \sqrt{-2x_C1 (-2_C1 - x + \sqrt{4_C1 x + x^2})} \right\}$$

2.303 ODE No. 303

$$y(x)(x^2y(x)^2 + 1) + x(xy(x) - 1)^2y'(x) = 0$$

✓ **Mathematica** : cpu = 0.043801 (sec), leaf count = 25

$$\text{Solve} \left[xy(x) - \frac{1}{xy(x)} - 2\log(y(x)) = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.178 (sec), leaf count = 34

$$\left\{ y(x) = \frac{e^{\text{RootOf}(-e^{2-Z} - 2e^{-Z}\ln(x) + 2e^{-Z}_C1 + 2_Ze^{-Z} + 1)}}{x} \right\}$$

2.304 ODE No. 304

$$5x^2y(x)^3 + (10x^3y(x)^2 + x^2y(x) + 2x)y'(x) + xy(x)^2 = 0$$

✓ **Mathematica** : cpu = 45.2793 (sec), leaf count = 59

$$\text{Solve} \left[-y(x) \left(\frac{\log(5x^2y(x)^2 + 2)}{2y(x)} + \frac{\tan^{-1}\left(\sqrt{\frac{5}{2}}xy(x)\right)}{\sqrt{10}y(x)} \right) - \log(y(x)) = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.208 (sec), leaf count = 44

$$\left\{ y(x) = \frac{\sqrt{10}}{5x} \tan \left(\text{RootOf} \left(\sqrt{10} \ln \left(\frac{4((\tan(_Z))^2 + 1)(\tan(_Z))^2}{5x^2} \right) + 2\sqrt{10}_C1 + 2_Z \right) \right) \right\}$$

2.305 ODE No. 305

$$x^2 + (y(x)^3 - 3x)y'(x) - 3y(x) = 0$$

✓ **Mathematica** : cpu = 0.0995662 (sec), leaf count = 1277

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{2} \sqrt{\frac{16\sqrt[3]{2}(x^3 + 3c_1)}{\sqrt[3]{104976x^2 - \sqrt{11019960576x^4 - 4(144x^3 + 432c_1)^3}} + \frac{\sqrt[3]{104976x^2 - \sqrt{11019960576x^4 - 4(144x^3 + 432c_1)^3}}}{9\sqrt[3]{2}}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.024 (sec), leaf count = 21

$$\left\{ \frac{x^3}{3} - 3xy(x) + \frac{(y(x))^4}{4} + _C1 = 0 \right\}$$

2.306 ODE No. 306

$$(y(x)^3 - x^3)y'(x) - x^2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0524991 (sec), leaf count = 201

$$\left\{ \left\{ y(x) \rightarrow \sqrt[3]{x^3 - \sqrt{x^6 - e^{6c_1}}} \right\}, \left\{ y(x) \rightarrow -\sqrt[3]{-1} \sqrt[3]{x^3 - \sqrt{x^6 - e^{6c_1}}} \right\}, \left\{ y(x) \rightarrow (-1)^{2/3} \sqrt[3]{x^3 - \sqrt{x^6 - e^{6c_1}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.353 (sec), leaf count = 381

$$\left\{ y(x) = x \frac{1}{\sqrt[3]{(-x^3 - C1 + \sqrt{-C1^2x^6 + 1})x^3 - C1}}, y(x) = x \frac{1}{\sqrt[3]{-(x^3 - C1 + \sqrt{-C1^2x^6 + 1})x^3 - C1}}, y(x) = x \frac{1}{\sqrt[3]{(x^3 - C1 + \sqrt{-C1^2x^6 + 1})x^3 - C1}} \right\}$$

2.307 ODE No. 307

$$y(x) (a + x^2 + y(x)^2) y'(x) + x(-a + x^2 + y(x)^2) = 0$$

✓ **Mathematica** : cpu = 0.0271126 (sec), leaf count = 149

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{-\sqrt{a^2 + 4ax^2 + 4c_1} - a - x^2} \right\}, \left\{ y(x) \rightarrow \sqrt{-\sqrt{a^2 + 4ax^2 + 4c_1} - a - x^2} \right\}, \left\{ y(x) \rightarrow -\sqrt{-x^2 - a + \sqrt{4ax^2 + a^2 - 4C1}} \right\}, \left\{ y(x) \rightarrow \sqrt{-x^2 - a + \sqrt{4ax^2 + a^2 - 4C1}} \right\}, \left\{ y(x) \rightarrow -\sqrt{-x^2 - a - \sqrt{4ax^2 + a^2 - 4C1}} \right\}, \left\{ y(x) \rightarrow \sqrt{-x^2 - a - \sqrt{4ax^2 + a^2 - 4C1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.051 (sec), leaf count = 125

$$\left\{ y(x) = \sqrt{-x^2 - a - \sqrt{4ax^2 + a^2 - 4C1}}, y(x) = \sqrt{-x^2 - a + \sqrt{4ax^2 + a^2 - 4C1}}, y(x) = -\sqrt{-x^2 - a + \sqrt{4ax^2 + a^2 - 4C1}}, y(x) = -\sqrt{-x^2 - a - \sqrt{4ax^2 + a^2 - 4C1}}, y(x) = \sqrt{-x^2 - a - \sqrt{4ax^2 + a^2 - 4C1}} \right\}$$

2.308 ODE No. 308

$$2y(x)^3 y'(x) + xy(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.00807928 (sec), leaf count = 55

$$\left\{ \left\{ y(x) \rightarrow 0 \right\}, \left\{ y(x) \rightarrow -\frac{\sqrt{4c_1 - x^2}}{\sqrt{2}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{4c_1 - x^2}}{\sqrt{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.016 (sec), leaf count = 37

$$\left\{ y(x) = 0, y(x) = -\frac{1}{2}\sqrt{-2x^2 + 4C1}, y(x) = \frac{1}{2}\sqrt{-2x^2 + 4C1} \right\}$$

2.309 ODE No. 309

$$-2x^3 + (2y(x)^3 + y(x)) y'(x) - x = 0$$

✓ **Mathematica** : cpu = 0.0146281 (sec), leaf count = 151

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{-\sqrt{8c_1 + 4x^4 + 4x^2 + 1} - 1}}{\sqrt{2}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{-\sqrt{8c_1 + 4x^4 + 4x^2 + 1} - 1}}{\sqrt{2}} \right\}, \left\{ y(x) \rightarrow -\sqrt{-2 - 2\sqrt{4x^4 + 4x^2 + 8C1 + 1}} \right\}, \left\{ y(x) \rightarrow \sqrt{-2 - 2\sqrt{4x^4 + 4x^2 + 8C1 + 1}} \right\}, \left\{ y(x) \rightarrow -\sqrt{-2 + 2\sqrt{4x^4 + 4x^2 + 8C1 + 1}} \right\}, \left\{ y(x) \rightarrow \sqrt{-2 + 2\sqrt{4x^4 + 4x^2 + 8C1 + 1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.04 (sec), leaf count = 113

$$\left\{ y(x) = -\frac{1}{2}\sqrt{-2 - 2\sqrt{4x^4 + 4x^2 + 8C1 + 1}}, y(x) = \frac{1}{2}\sqrt{-2 - 2\sqrt{4x^4 + 4x^2 + 8C1 + 1}}, y(x) = -\sqrt{-2 + 2\sqrt{4x^4 + 4x^2 + 8C1 + 1}}, y(x) = \sqrt{-2 + 2\sqrt{4x^4 + 4x^2 + 8C1 + 1}} \right\}$$

2.310 ODE No. 310

$$x^3 + (5x^2y(x) + 2y(x)^3) y'(x) + 5xy(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0459177 (sec), leaf count = 159

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{-\sqrt{2e^{4c_1} + 23x^4} - 5x^2}}{\sqrt{2}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{-\sqrt{2e^{4c_1} + 23x^4} - 5x^2}}{\sqrt{2}} \right\}, \left\{ y(x) \rightarrow -\frac{\sqrt{\sqrt{2e^{4c_1} + 23x^4} - 5x^2}}{\sqrt{2}} \right\} \right.$$

✓ **Maple** : cpu = 0.203 (sec), leaf count = 125

$$\left\{ y(x) = -\frac{1}{2} \sqrt{-10x^2 - C1 - 2\sqrt{23x^4 - C1^2} + 2} \frac{1}{\sqrt{-C1}}, y(x) = \frac{1}{2} \sqrt{-10x^2 - C1 - 2\sqrt{23x^4 - C1^2} + 2} \frac{1}{\sqrt{-C1}} \right.$$

2.311 ODE No. 311

$$4x^3 + 9x^2y(x) + (3x^3 + 6x^2y(x) - 3xy(x)^2 + 20y(x)^3) y'(x) + 6xy(x)^2 - y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.174446 (sec), leaf count = 2201

$$\left\{ \left\{ y(x) \rightarrow \frac{x}{20} + \frac{1}{2} \sqrt{-\frac{39x^2}{100} + \frac{\sqrt[3]{99x^6 + 351e^{c_1}x^2} + \sqrt{3}\sqrt{-67037x^{12} + 185406e^{c_1}x^8 - 83733e^{2c_1}x^4 + 320e^{3c_1}}}{5\sqrt[3]{23^2/3}}} \right\} \right.$$

✓ **Maple** : cpu = 0.184 (sec), leaf count = 50

$$\left\{ y(x) = \frac{\text{RootOf}(x^4 - C1^4 + 3x^3 - C1^3 - Z + 3 - C1^2 - Z^2x^2 - C1 - Z^3x + 5 - Z^4 - 1)}{-C1} \right\}$$

2.312 ODE No. 312

$$(y(x)y'(x) + x) \left(\frac{x^2}{a} + \frac{y(x)^2}{b} \right) + \frac{(a-b)(y(x)y'(x) - x)}{a+b} = 0$$

✓ **Mathematica** : cpu = 0.250683 (sec), leaf count = 204

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{b} \sqrt{a^2 + 2a^2 W \left(\frac{c_1(a+b)e^{\frac{bx^2}{2a^2} - \frac{b}{2a} - \frac{x^2}{2b} - \frac{1}{2}} \right) + ab - ax^2 - bx^2}}{\sqrt{a}\sqrt{a+b}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{b} \sqrt{a^2 + 2a^2 W \left(\dots \right)}}{\dots} \right\} \right.$$

✓ **Maple** : cpu = 1.589 (sec), leaf count = 236

$$\left\{ y(x) = \frac{1}{a} \sqrt{a \left(-bx^2 + ab + e^{-\frac{1}{2a^2b}} \left(2 \operatorname{lambertW} \left(\frac{1}{2} \frac{(a+b)e^{-1/2} e^{-1/2} \frac{x^2}{b} e^{1/2} \frac{bx^2}{a^2} e^{-1/2} \frac{b}{a} \left(e^{-\frac{C1}{ab}} \right)^{-1} \right) a^2b + a^2x^2 - b^2x^2 + a^2b + \dots \right) \right)}$$

2.313 ODE No. 313

$$y'(x) (3axy(x)^2 + 2ay(x)^3 - bx^3 + cx^2) - ay(x)^3 + 2bx^3 + 3bx^2y(x) + cy(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0903104 (sec), leaf count = 537

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{2}(3acx + 3ac_1)}{3a \sqrt[3]{\sqrt{(27a^2bx^3 + 27a^2c_1x)^2 + 4(3acx + 3ac_1)^3 + 27a^2bx^3 + 27a^2c_1x}}} - \frac{\sqrt[3]{\sqrt{(27a^2bx^3 + 27a^2c_1x)^2 + 4(3acx + 3ac_1)^3 + 27a^2bx^3 + 27a^2c_1x}}}{\dots} \right\}$$

✓ **Maple** : cpu = 0.218 (sec), leaf count = 912

$$\left\{ y(x) = \frac{1}{6a} \sqrt[3]{ \left(-108bx^3 + 108_C1x + 12 \sqrt{-\frac{-81ab^2x^6 + 162_C1abx^4 - 12c^3x^3 - 81_C1^2ax^2 + \dots}{a}} \right) }$$

2.314 ODE No. 314

$$xy(x)^3y'(x) + y(x)^4 - x \sin(x) = 0$$

✓ **Mathematica** : cpu = 0.0445677 (sec), leaf count = 188

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt[4]{c_1 - 4x^4 \cos(x) + 16x^3 \sin(x) + 48x^2 \cos(x) - 96x \sin(x) - 96 \cos(x)}}{x} \right\}, \left\{ y(x) \rightarrow -\frac{i \sqrt[4]{c_1}}{x} \right\} \right.$$

✓ **Maple** : cpu = 0.053 (sec), leaf count = 170

$$\left\{ y(x) = \frac{1}{x} \sqrt[4]{-4x^4 \cos(x) + 16 \sin(x)x^3 + 48x^2 \cos(x) - 96 \cos(x) - 96x \sin(x) + _C1}, y(x) = \frac{-i}{x} \sqrt[4]{_C1} \right.$$

2.315 ODE No. 315

$$(2xy(x)^3 - x^4)y'(x) + 2x^3y(x) - y(x)^4 = 0$$

✓ **Mathematica** : cpu = 0.112184 (sec), leaf count = 368

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{\frac{2}{3}e^{c_1}x}}{\sqrt[3]{\sqrt{3}\sqrt{27x^6 - 4e^{3c_1}x^3 - 9x^3}}} + \frac{\sqrt[3]{\sqrt{3}\sqrt{27x^6 - 4e^{3c_1}x^3 - 9x^3}}}{\sqrt[3]{2}3^{2/3}} \right\}, \left\{ y(x) \rightarrow -\frac{(1+i)}{2^{2/3}\sqrt[3]{3}\sqrt[3]{\sqrt{3}\sqrt{27x^6 - 4e^{3c_1}x^3 - 9x^3}}} \right\} \right.$$

✓ **Maple** : cpu = 0.09 (sec), leaf count = 447

$$\left\{ y(x) = \frac{\sqrt[3]{12}}{6_C1} \sqrt[3]{x \left(-9x^2_C1 + \sqrt{3} \sqrt{\frac{x(27x^3_C1^3 - 4)}{-C1}} \right)} - C1^2 + \frac{x12^{\frac{2}{3}}}{6} \frac{1}{\sqrt[3]{x \left(-9x^2_C1 + \sqrt{3} \sqrt{\frac{x(27x^3_C1^3 - 4)}{-C1}} \right)}} \right.$$

2.316 ODE No. 316

$$(2xy(x)^3 + y(x)) y'(x) + 2y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0642451 (sec), leaf count = 48

$$\left\{ \{y(x) \rightarrow 0\}, \text{Solve} \left[x = c_1 e^{-\frac{1}{2}y(x)^2} - \frac{1}{4} e^{-\frac{1}{2}y(x)^2} \text{Ei} \left(\frac{y(x)^2}{2} \right), y(x) \right] \right\}$$

✓ **Maple** : cpu = 0.055 (sec), leaf count = 53

$$\left\{ y(x) = 0, y(x) = \sqrt{-2 \text{RootOf}(e^{-Z} \text{Ei}(1, -Z) + 4e^{-Z} C1 - 4x)}, y(x) = -\sqrt{-2 \text{RootOf}(e^{-Z} \text{Ei}(1, -Z) + 4e^{-Z} C1 - 4x)} \right\}$$

2.317 ODE No. 317

$$(x^2 + 2xy(x)^3 + xy(x)) y'(x) + y(x)^2 - xy(x) = 0$$

✓ **Mathematica** : cpu = 0.337379 (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 = 0.128 (sec), leaf count = 29

$$\left\{ y(x) = e^{\text{RootOf}(- (e^{-Z})^3 - e^{-Z} \ln(x) + e^{-Z} C1 - Z e^{-Z} + x)} \right\}$$

2.318 ODE No. 318

$$(3xy(x)^3 - 4xy(x) + y(x)) y'(x) + (y(x)^2 - 2) y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.15066 (sec), leaf count = 4284

$$\left\{ \{y(x) \rightarrow 0\}, \left\{ y(x) \rightarrow -\sqrt{\frac{4\sqrt[3]{2}x^2}{3\sqrt[3]{16x^6 + 24x^5 - 27c_1^2x^4 + 12x^4 + 2x^3 + 3\sqrt{3}\sqrt{-32c_1^2x^{10} - 48c_1^2x^9 + 27c_1^4x^8}}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.025 (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

$$(7xy(x)^3 + y(x) - 5x) y'(x) + y(x)^4 - 5y(x) = 0$$

✓ **Mathematica** : cpu = 0.024929 (sec), leaf count = 302

$$\{ \{y(x) \rightarrow \text{Root}[10\#1^7x + 2\#1^5 - 100\#1^4x - 25\#1^2 + 250\#1x - 10c_1\&, 1] \}, \{y(x) \rightarrow \text{Root}[10\#1^7x +$$

✓ **Maple** : cpu = 0.041 (sec), leaf count = 33

$$\left\{ x - \frac{1}{((y(x))^3 - 5)^2 y(x)} \left(-\frac{(y(x))^5}{5} + \frac{5(y(x))^2}{2} + -C1 \right) = 0 \right\}$$

2.320 ODE No. 320

$$(x^2y(x)^3 + xy(x)) y'(x) - 1 = 0$$

✓ **Mathematica** : cpu = 0.0589686 (sec), leaf count = 76

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{2xW\left(c_1e^{\frac{1}{2x}-1}\right) + 2x - 1}}{\sqrt{x}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{2xW\left(c_1e^{\frac{1}{2x}-1}\right) + 2x - 1}}{\sqrt{x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.101 (sec), leaf count = 70

$$\left\{ y(x) = \frac{1}{x} \sqrt{x \left(2 \text{lambertW} \left(1/2_C1 e^{-1/2 \frac{2x-1}{x}} \right) x + 2x - 1 \right)}, y(x) = -\frac{1}{x} \sqrt{x \left(2 \text{lambertW} \left(1/2_C1 e \right. \right.} \right.$$

2.321 ODE No. 321

$$(2x^2y(x)^3 + x^2y(x)^2 - 2x) y'(x) - 2y(x) - 1 = 0$$

✓ **Mathematica** : cpu = 0.179891 (sec), leaf count = 47

$$\text{Solve} \left[\frac{1}{64} (-4y(x)^2 + 4y(x) - 2 \log(8y(x) + 4) + 3) - \frac{1}{4x(2y(x) + 1)} = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.175 (sec), leaf count = 42

$$\left\{ y(x) = \frac{e^{\text{RootOf}(x(e^{-Z})^3 - 4x(e^{-Z})^2 + 8_C1 x e^{-Z} + 2_Z x e^{-Z} + 3x e^{-Z} + 16)}}{2} - \frac{1}{2} \right\}$$

2.322 ODE No. 322

$$(10x^2 y(x)^3 - 3y(x)^2 - 2) y'(x) + 5xy(x)^4 + x = 0$$

✓ **Mathematica** : cpu = 0.210258 (sec), leaf count = 2077

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{2} \sqrt{\frac{4\sqrt[3]{2}(5x^4 - 10c_1 x^2 - 2)}{5x^2 \sqrt[3]{2268x^2 - 216c_1} + \sqrt{(2160x^2 + 108(x^2 - 2c_1))^2 - 4(60x^4 - 120c_1 x^2 - 24)^3}} + \sqrt[3]{2268x^2 - 216c_1}} \right. \right.$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 28

$$\left\{ \frac{x^2(5(y(x))^4 + 1)}{2} - (y(x))^3 - 2y(x) + _C1 = 0 \right\}$$

2.323 ODE No. 323

$$xy'(x)(axy(x)^3 + c) + y(x)(bx^3y(x) + c) = 0$$

✓ **Mathematica** : cpu = 0.0456019 (sec), leaf count = 463

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{54a^2cx^2 + \sqrt{2916a^4c^2x^4 + 108a^3x^3(bx^3 - 2c_1x)^3}}}{3\sqrt[3]{2ax}} - \frac{\sqrt[3]{2}(bx^3 - 2c_1x)}{\sqrt[3]{54a^2cx^2 + \sqrt{2916a^4c^2x^4 + 108a^3x^3(bx^3 - 2c_1x)^3}}} \right. \right.$$

✓ **Maple** : cpu = 0.136 (sec), leaf count = 761

$$\left\{ y(x) = \frac{1}{3ax} \sqrt[3]{\left(27c + 3\sqrt{-\frac{-3b^3x^8 + 18_C1 b^2x^6 - 36_C1^2 bx^4 + 24_C1^3 x^2 - 81c^2 a}{a}} \right)} a^2 x^2 + x(\dots)$$

2.324 ODE No. 324

$$(2x^3y(x)^3 - x) y'(x) + 2x^3y(x)^3 - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0360827 (sec), leaf count = 723

$$\left\{ \left\{ y(x) \rightarrow -\frac{2x^3 - c_1x^2}{6x^2} + \frac{\sqrt[3]{12c_1x^8 - 6c_1^2x^7 + c_1^3x^6 + 3\sqrt{3}\sqrt{-24c_1x^{12} + 12c_1^2x^{11} - 2c_1^3x^{10} + 16x^{13} + 27c_1^4x^9}}{6x^2} \right. \right.$$

✓ **Maple** : cpu = 0.142 (sec), leaf count = 770

$$\left\{ y(x) = \frac{1}{6x} \sqrt[3]{(-C1^3x^2 - 6_C1^2x^3 + 12_C1x^4 - 8x^5 + 3\sqrt{-6_C1^3x^2 + 36_C1^2x^3 - 72_C1x^4 + 16x^5 + 27C1^4})} \right.$$

2.325 ODE No. 325

$$y(x) (y(x)^3 - 2x^3) y'(x) + x(2y(x)^3 - x^3) = 0$$

✓ **Mathematica** : cpu = 0.0517894 (sec), leaf count = 139

$$\text{Solve} \left[\frac{1}{7} \text{RootSum} \left[\#1^4 + \#1^3 + 3\#1^2 + \#1 + 1 \&, \frac{8\#1^3 \log\left(\frac{y(x)}{x} - \#1\right) + 9\#1^2 \log\left(\frac{y(x)}{x} - \#1\right) + 12\#1 \log\left(\frac{y(x)}{x} - \#1\right)}{4\#1^3 + 3\#1^2 + 6\#1 + 1} \right] \right]$$

✓ **Maple** : cpu = 0.516 (sec), leaf count = 1192

$$\left\{ y(x) = -\frac{\sqrt{3}x}{6} \left(\sqrt{3} - 3 \text{RootOf} \left(3_Z - \sqrt{3} - 4_C1 + 3_Z^3 - \tan \left(\frac{1}{6} \sqrt{3} \ln \left(\frac{1}{x^7 (6\sqrt{3}_Z^3 - 9_C1)} \right) \right) \right. \right.$$

2.326 ODE No. 326

$$y(x)y'(x) ((ay(x) + bx)^3 + bx^3) + x((ay(x) + bx)^3 + ay(x)^3) = 0$$

✓ **Mathematica** : cpu = 5.42347 (sec), leaf count = 13289

✓ **Maple** : cpu = 0.457 (sec), leaf count = 160

$$\left\{ y(x) = \frac{x(-C1 x - b\text{RootOf}(b^2 Z^4 - 2bx C1 Z^3 + (a^2 x^2 C1^2 + b^2 x^2 C1^2 + C1^2 x^2 - a^2) Z^2 - a\text{RootOf}(b^2 Z^4 - 2bx C1 Z^3 + (a^2 x^2 C1^2 + b^2 x^2 C1^2 + C1^2 x^2 - a^2) Z^2 - 2bx$$

2.327 ODE No. 327

$$(2x^2y(x)^3 + xy(x)^4 + 2y(x) + x) y'(x) + y(x)^5 + y(x) = 0$$

✓ **Mathematica** : cpu = 0.396823 (sec), leaf count = 669

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{9c_1^2 x^2 + 3\sqrt{3}\sqrt{-4c_1^3 x^6 - c_1^4 x^4 + 18c_1^2 x^4 + 4c_1^3 x^2 + 27x^4 + 2c_1^3 + 27x^2}}}{3\sqrt[3]{2}x} - \frac{1}{3x\sqrt[3]{9c_1^2 x^2 + 3\sqrt{3}\sqrt{-4c_1^3 x^6 - c_1^4 x^4 + 18c_1^2 x^4 + 4c_1^3 x^2 + 27x^4 + 2c_1^3 + 27x^2}} \right. \right.$$

✓ **Maple** : cpu = 0.18 (sec), leaf count = 583

$$\left\{ y(x) = \frac{1}{12 C1 x} \left(\left(-12 i x^2 C1 - i \left(108 C1^3 x^2 + 12 \sqrt{3} \sqrt{27 C1^4 x^2 + 18 C1^2 x^2 + (4 x^4 - 4) C1} \right) \right) \right)$$

2.328 ODE No. 328

$$ax^2y(x)^ny'(x) - 2xy'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.098253 (sec), leaf count = 42

$$\text{Solve}\left[\frac{n(\log(x) - \log(-axy(x)^n + n + 2))}{n + 2} - \frac{2n \log(y(x))}{n + 2} = c_1, y(x)\right]$$

✓ **Maple** : cpu = 0.193 (sec), leaf count = 33

$$\left\{ \frac{x^n}{((y(x))^n ax - n - 2)^n ((y(x))^n)^2} - _C1 = 0 \right\}$$

2.329 ODE No. 329

$$x^ny(x)^m (axy'(x) + by(x)) + \alpha xy'(x) + \beta y(x) = 0$$

✓ **Mathematica** : cpu = 0.326085 (sec), leaf count = 102

$$\text{Solve}\left[\frac{m((a\beta - \alpha b) \log(x^n y(x)^m (bm - an) - \alpha n + \beta m) + \beta \log(x)(bm - an))}{(bm - an)(\beta m - \alpha n)} + \frac{\alpha m \log(\beta m y(x) - \alpha n y(x))}{\beta m - \alpha n} = c_1, y(x)\right]$$

✓ **Maple** : cpu = 0.361 (sec), leaf count = 78

$$\left\{ ((y(x))^m)^{a\alpha n - \alpha b m} (x^n n (y(x))^m a - x^n (y(x))^m m b + \alpha n - \beta m)^{-a\beta m + \alpha b m} x^{a\beta m n - b\beta m^2} - _C1 = 0 \right\}$$

2.330 ODE No. 330

$$(f(y(x) + x) + 1)y'(x) + f(y(x) + x) = 0$$

✓ **Mathematica** : cpu = 32.0517 (sec), leaf count = 49

$$\text{Solve}\left[\int_1^{y(x)} \left(-\int_1^x f'(K[1] + K[2]) dK[1] + f(K[2] + x) + 1\right) dK[2] + \int_1^x f(K[1] + y(x)) dK[1] = c_1, y(x)\right]$$

✓ **Maple** : cpu = 0.031 (sec), leaf count = 22

$$\left\{ y(x) = -x + \text{RootOf}\left(-x + \int^{-Z} 1 + f(_a) d_a + _C1\right) \right\}$$

2.331 ODE No. 331

$$y'(x) \left(\sum_{\nu=1}^p y(x)^\nu f(\nu)(x) \right) - \sum_{\nu=1}^q y(x)^\nu g(\nu)(x) = 0$$

✗ **Mathematica** : cpu = 54.8224 (sec), leaf count = 0 , could not solve

DSolve[-Sum[y[x]^nu*g[nu][x], {nu, 1, q}] + Sum[y[x]^nu*f[nu][x], {nu, 1, p}]*Derivati

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.332 ODE No. 332

$$x \left(\sqrt{xy(x)} - 1 \right) y'(x) - y(x) \left(\sqrt{xy(x)} + 1 \right) = 0$$

✓ **Mathematica** : cpu = 0.0817774 (sec), leaf count = 24

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

✓ **Maple** : cpu = 0.016 (sec), leaf count = 31

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

2.333 ODE No. 333

$$-x^{3/2}y(x)^{5/2} + (2x^{5/2}y(x)^{3/2} + x^2y(x) - x) y'(x) + xy(x)^2 - y(x) = 0$$

✓ **Mathematica** : cpu = 0.169251 (sec), leaf count = 72

$$\text{Solve} \left[\frac{2\sqrt{xy(x)} \log(y(x))}{\sqrt{x}\sqrt{y(x)}} - \frac{\sqrt{xy(x)}(3x^{3/2}y(x)^{3/2} \log(x) + 6xy(x) - 2)}{3x^2y(x)^2} = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.099 (sec), leaf count = 32

$$\left\{ \ln(y(x)) + \frac{1}{3}(y(x))^{-\frac{3}{2}} x^{-\frac{3}{2}} - 1 \frac{1}{\sqrt{x}} \frac{1}{\sqrt{y(x)}} - \frac{\ln(x)}{2} - _C1 = 0 \right\}$$

2.334 ODE No. 334

$$\left(\sqrt{y(x)+x+1}\right)y'(x)+1=0$$

✓ **Mathematica** : cpu = 0.0367313 (sec), leaf count = 39

$$\left\{\left\{y(x) \rightarrow -2\sqrt{c_1+x+1}+c_1+2\right\},\left\{y(x) \rightarrow 2\sqrt{c_1+x+1}+c_1+2\right\}\right\}$$

✓ **Maple** : cpu = 0.028 (sec), leaf count = 19

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

2.335 ODE No. 335

$$\sqrt{y(x)^2-1}y'(x)-\sqrt{x^2-1}=0$$

✓ **Mathematica** : cpu = 0.177951 (sec), leaf count = 75

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

✓ **Maple** : cpu = 0.013 (sec), leaf count = 50

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

2.336 ODE No. 336

$$\left(ax+\sqrt{y(x)^2+1}\right)y'(x)+ay(x)+\sqrt{x^2+1}=0$$

✓ **Mathematica** : cpu = 0.0636224 (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 = 0.036 (sec), leaf count = 41

$$\left\{\frac{x}{2}\sqrt{x^2+1}+\frac{\text{Arcsinh}(x)}{2}+axy(x)+\frac{y(x)}{2}\sqrt{\left(y(x)\right)^2+1}+\frac{\text{Arcsinh}(y(x))}{2}+_C1=0\right\}$$

2.337 ODE No. 337

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

✓ **Mathematica** : cpu = 0.0592073 (sec), leaf count = 52

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

✓ **Maple** : cpu = 0.059 (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

$$y'(x) \left(\sin(\alpha) (y(x)^2 - x^2) - 2x \cos(\alpha) y(x) + \sqrt{x^2 + y(x)^2} y(x) \right) + \cos(\alpha) (y(x)^2 - x^2) + 2x \sin(\alpha) y(x) + x \sqrt{x^2 + y(x)^2} = 0$$

✓ **Mathematica** : cpu = 100.276 (sec), leaf count = 17681

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{2} e^{c_1} \sin(\alpha) - \frac{1}{2} \sqrt{e^{2c_1} \sin^2(\alpha) + \frac{1}{6} (4x^2 - 4e^{c_1} \cos(\alpha)x - e^{2c_1} - e^{2c_1} \cos(2\alpha)) + \frac{1}{2} (-4x^2 + 4x \sqrt{x^2 + y(x)^2} + y(x)^2)} \right\} \right\}$$

✓ **Maple** : cpu = 0.743 (sec), leaf count = 136

$$\left\{ y(x) = \text{RootOf} \left(-\ln(x) + \int^{-z} -\frac{1}{(_a^2 + 1) (\cos(2\alpha) _a^2 + 2_a \sin(2\alpha) + _a^2 - \cos(2\alpha) + 1)} \right) \right\}$$

2.339 ODE No. 339

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

✓ **Mathematica** : cpu = 0.106652 (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 = 0.19 (sec), leaf count = 27

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

2.340 ODE No. 340

$$y'(x) \left(\frac{e1(a+x)}{((a+x)^2 + y(x)^2)^{3/2}} + \frac{e2(x-a)}{((x-a)^2 + y(x)^2)^{3/2}} \right) - y(x) \left(\frac{e1}{((a+x)^2 + y(x)^2)^{3/2}} + \frac{e2}{((x-a)^2 + y(x)^2)^{3/2}} \right)$$

✗ **Mathematica** : cpu = 300.038 (sec), leaf count = 0 , timed out

\$Aborted

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.341 ODE No. 341

$$(xe^{y(x)} + e^x) y'(x) + e^x y(x) + e^{y(x)} = 0$$

✓ **Mathematica** : cpu = 0.0510445 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-x} - W \left(x e^{c_1 e^{-x} - x} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.059 (sec), leaf count = 30

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

2.342 ODE No. 342

$$x(2e^{-xy(x)} + 3e^{xy(x)})(xy'(x) + y(x)) + 1 = 0$$

✓ **Mathematica** : cpu = 0.260108 (sec), leaf count = 163

$$\left\{ \left\{ y(x) \rightarrow -\frac{\cosh^{-1}\left(\frac{1}{24}\left(-5\sqrt{\log^2\left(\frac{c_1}{x}\right) + 24} - \log\left(\frac{c_1}{x}\right)\right)\right)}{x} \right\}, \left\{ y(x) \rightarrow \frac{\cosh^{-1}\left(\frac{1}{24}\left(-5\sqrt{\log^2\left(\frac{c_1}{x}\right) + 24}\right)\right)}{x} \right\} \right.$$

✓ **Maple** : cpu = 0.045 (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

$$y'(x)(\log(y(x)) + x) - 1 = 0$$

✓ **Mathematica** : cpu = 0.0381875 (sec), leaf count = 35

$$\text{Solve}[x = c_1 e^{y(x)} + e^{y(x)}(\text{Ei}(-y(x)) - e^{-y(x)} \log(y(x))), y(x)]$$

✓ **Maple** : cpu = 0.052 (sec), leaf count = 27

$$\left\{ y(x) = e^{\text{RootOf}\left(-_Z - x - e^{-Z} \text{Ei}(1, e^{-Z}) + _C1 e^{-Z}\right)} \right\}$$

2.344 ODE No. 344

$$y'(x)(\log(y(x)) + 2x - 1) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0204243 (sec), leaf count = 23

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

✓ **Maple** : cpu = 0.032 (sec), leaf count = 19

$$\left\{ y(x) = e^{-\text{lambertW}(-2e^{-2x} - C1) - 2x} \right\}$$

2.345 ODE No. 345

$$xy'(x) (2x^2y(x) \log(y(x)) + 1) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.04329 (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 = 0.066 (sec), leaf count = 36

$$\left\{ y(x) = e^{\text{RootOf}(2_Z x^2 (e^{-Z})^2 - x^2 (e^{-Z})^2 + 2 x^2_C1 + 2 e^{-Z})} \right\}$$

2.346 ODE No. 346

$$xy'(x)(-ax + y(x) + y(x) \log(xy(x))) - y(x)(ax \log(xy(x)) + ax - y(x)) = 0$$

✓ **Mathematica** : cpu = 0.0594134 (sec), leaf count = 24

$$\text{Solve}[ax \log(xy(x)) - y(x) \log(xy(x)) = c_1, y(x)]$$

✓ **Maple** : cpu = 0.284 (sec), leaf count = 19

$$\left\{ (xy(x))^{-ax+y(x)} -_C1 = 0 \right\}$$

2.347 ODE No. 347

$$(\sin(x) + 1)y'(x) \sin(y(x)) + \cos(x)(\cos(y(x)) - 1) = 0$$

✓ **Mathematica** : cpu = 0.124774 (sec), leaf count = 32

$$\left\{ \left\{ y(x) \rightarrow 0 \right\}, \left\{ y(x) \rightarrow 2 \sin^{-1} \left(\frac{1}{4} c_1 \left(\sin \left(\frac{x}{2} \right) + \cos \left(\frac{x}{2} \right) \right) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.142 (sec), leaf count = 16

$$\{y(x) = \pi - \arccos(\sin(x) _C1 + _C1 - 1)\}$$

2.348 ODE No. 348

$$y'(x)(x \cos(y(x)) + \sin(x)) + \sin(y(x)) + y(x) \cos(x) = 0$$

✓ **Mathematica** : cpu = 0.0492078 (sec), leaf count = 17

$$\text{Solve}[x \sin(y(x)) + y(x) \sin(x) = c_1, y(x)]$$

✓ **Maple** : cpu = 0.104 (sec), leaf count = 15

$$\{y(x) \sin(x) + x \sin(y(x)) + _C1 = 0\}$$

2.349 ODE No. 349

$$xy'(x) \cot\left(\frac{y(x)}{x}\right) + 2x \sin\left(\frac{y(x)}{x}\right) - y(x) \cot\left(\frac{y(x)}{x}\right) = 0$$

✓ **Mathematica** : cpu = 0.0406297 (sec), leaf count = 15

$$\left\{ \left\{ y(x) \rightarrow x \csc^{-1}(2(c_1 + \log(x))) \right\} \right\}$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 15

$$\left\{ y(x) = \arcsin\left(\frac{1}{2 \ln(x) + 2_C1}\right) x \right\}$$

2.350 ODE No. 350

$$y'(x) \cos(y(x)) - \sin(y(x)) - \cos(x) \sin^2(y(x)) = 0$$

✓ **Mathematica** : cpu = 0.562796 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow \csc^{-1}\left(\frac{1}{2}(-2c_1 e^{-x} - \sin(x) - \cos(x))\right) \right\}, \left\{ y(x) \rightarrow -\csc^{-1}\left(\frac{1}{2}(2c_1 e^{-x} + \sin(x) + \cos(x))\right) \right\} \right\}$$

✓ **Maple** : cpu = 1.076 (sec), leaf count = 270

$$\left\{ y(x) = \arctan\left(-2 \frac{e^x}{e^x \cos(x) + e^x \sin(x) + 2_C1}, \frac{1}{2 \cos(x) \sin(x) (e^x)^2 + 4_C1 \sin(x) e^x + 4 \cos(x)}\right) \right\}$$

2.351 ODE No. 351

$$y'(x) \cos(y(x)) - \sin^3(y(x)) + x \sin(y(x)) \cos^2(y(x)) = 0$$

✓ **Mathematica** : cpu = 0.368184 (sec), leaf count = 61

$$\left\{ \left\{ y(x) \rightarrow -\cot^{-1} \left(\sqrt{e^{x^2} (4c_1 - \sqrt{\pi} \operatorname{erf}(x))} \right) \right\}, \left\{ y(x) \rightarrow \cot^{-1} \left(\sqrt{e^{x^2} (4c_1 - \sqrt{\pi} \operatorname{erf}(x))} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.51 (sec), leaf count = 55

$$\left\{ y(x) = -\arcsin \left(\frac{1}{\sqrt{1 - \sqrt{\pi} \operatorname{Erf}(x) e^{x^2} - 2_C1 e^{x^2}}} \right), y(x) = \arcsin \left(\frac{1}{\sqrt{1 - \sqrt{\pi} \operatorname{Erf}(x) e^{x^2} - 2_C1 e^{x^2}}} \right) \right\}$$

2.352 ODE No. 352

$$y'(x) \cos(y(x)) (\cos(y(x)) - \sin(\alpha) \sin(x)) + \cos(x) (\cos(x) - \sin(\alpha) \sin(y(x))) = 0$$

✓ **Mathematica** : cpu = 0.131998 (sec), leaf count = 43

$$\text{Solve} \left[4 \sin(\alpha) \sin(x) \sin(y(x)) - 4 \left(\frac{y(x)}{2} + \frac{1}{4} \sin(2y(x)) \right) - 2x - \sin(2x) = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.288 (sec), leaf count = 35

$$\left\{ -\sin(\alpha) \sin(x) \sin(y(x)) + \frac{\cos(x) \sin(x)}{2} + \frac{x}{2} + \frac{\sin(y(x)) \cos(y(x))}{2} + \frac{y(x)}{2} + _C1 = 0 \right\}$$

2.353 ODE No. 353

$$xy'(x) \cos(y(x)) + \sin(y(x)) = 0$$

✓ **Mathematica** : cpu = 0.0202777 (sec), leaf count = 14

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

✓ **Maple** : cpu = 0.063 (sec), leaf count = 12

$$\left\{ y(x) = \arcsin \left(\frac{1}{_C1 x} \right) \right\}$$

2.354 ODE No. 354

$$y'(x)(x \sin(y(x)) - 1) + \cos(y(x)) = 0$$

✓ **Mathematica** : cpu = 0.0658719 (sec), leaf count = 145

$$\left\{ \left\{ y(x) \rightarrow -\cos^{-1} \left(\frac{c_1 x - \sqrt{c_1^2 - x^2 + 1}}{c_1^2 + 1} \right) \right\}, \left\{ y(x) \rightarrow \cos^{-1} \left(\frac{c_1 x - \sqrt{c_1^2 - x^2 + 1}}{c_1^2 + 1} \right) \right\}, \left\{ y(x) \rightarrow -\cos^{-1} \left(\frac{c_1 x - \sqrt{c_1^2 - x^2 + 1}}{c_1^2 + 1} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 115

$$\left\{ y(x) = \arctan \left(\frac{-C1}{-C1^2 + 1} \left(-C1 x + \sqrt{-C1^2 - x^2 + 1} \right) + x, -\frac{1}{-C1^2 + 1} \left(-C1 x + \sqrt{-C1^2 - x^2 + 1} \right) \right) \right\}$$

2.355 ODE No. 355

$$y'(x)(x \cos(y(x)) + \cos(x)) + \sin(y(x)) - y(x) \sin(x) = 0$$

✓ **Mathematica** : cpu = 0.0476219 (sec), leaf count = 17

$$\text{Solve}[x \sin(y(x)) + y(x) \cos(x) = c_1, y(x)]$$

✓ **Maple** : cpu = 0.104 (sec), leaf count = 15

$$\{y(x) \cos(x) + x \sin(y(x)) + C1 = 0\}$$

2.356 ODE No. 356

$$y'(x)(x^2 \cos(y(x)) + 2y(x) \sin(x)) + 2x \sin(y(x)) + y(x)^2 \cos(x) = 0$$

✓ **Mathematica** : cpu = 0.0604379 (sec), leaf count = 21

$$\text{Solve}[x^2 \sin(y(x)) + y(x)^2 \sin(x) = c_1, y(x)]$$

✓ **Maple** : cpu = 0.126 (sec), leaf count = 19

$$\{(y(x))^2 \sin(x) + x^2 \sin(y(x)) + C1 = 0\}$$

2.357 ODE No. 357

$$x \log(x) y'(x) \sin(y(x)) + \cos(y(x))(1 - x \cos(y(x))) = 0$$

✓ **Mathematica** : cpu = 0.306186 (sec), leaf count = 35

$$\left\{ \left\{ y(x) \rightarrow -\sec^{-1} \left(\frac{x - c_1}{\log(x)} \right) \right\}, \left\{ y(x) \rightarrow \sec^{-1} \left(\frac{x - c_1}{\log(x)} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.593 (sec), leaf count = 13

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

2.358 ODE No. 358

$$\cos(x) y'(x) \sin(y(x)) + \sin(x) \cos(y(x)) = 0$$

✓ **Mathematica** : cpu = 0.0443955 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow -\cos^{-1} \left(\frac{1}{2} c_1 \sec(x) \right) \right\}, \left\{ y(x) \rightarrow \cos^{-1} \left(\frac{1}{2} c_1 \sec(x) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.075 (sec), leaf count = 11

$$\left\{ y(x) = \arccos \left(\frac{_C1}{\cos(x)} \right) \right\}$$

2.359 ODE No. 359

$$3 \sin(x) y'(x) \sin(y(x)) + 5y(x) \cos^4(x) = 0$$

✓ **Mathematica** : cpu = 0.0575549 (sec), leaf count = 45

$$\left\{ \left\{ y(x) \rightarrow \text{SinIntegral}^{(-1)} \left(c_1 - \frac{5}{3} \left(\frac{5 \cos(x)}{4} + \frac{1}{12} \cos(3x) + \log \left(\sin \left(\frac{x}{2} \right) \right) - \log \left(\cos \left(\frac{x}{2} \right) \right) \right) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.054 (sec), leaf count = 28

$$\left\{ \frac{\cos(3x)}{12} + \frac{5 \cos(x)}{4} + \ln(\csc(x) - \cot(x)) + \frac{3 \text{Si}(y(x))}{5} + _C1 = 0 \right\}$$

2.360 ODE No. 360

$$y'(x) \cos(ay(x)) - b(1 - c \cos(ay(x))) \sqrt{c \cos(ay(x)) + \cos^2(ay(x)) - 1} = 0$$

✓ **Mathematica** : cpu = 52.4224 (sec), leaf count = 6218

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\sqrt{2}(\cos(a\#1) + 1) \sqrt{\frac{2c \cos(a\#1) + \cos(2a\#1) - 1}{(\cos(a\#1) + 1)^2}} \left(\frac{\left(\sqrt{-\frac{\sqrt{c^2+4}}{c} - \frac{2}{c}} + \sqrt{\frac{\sqrt{c^2+4}}{c} - \frac{2}{c}} \right) \left(\frac{\sqrt{c-1}}{\sqrt{c+1}} \right)}{\left(\sqrt{-\frac{\sqrt{c^2+4}}{c} - \frac{2}{c}} + \sqrt{\frac{\sqrt{c^2+4}}{c} - \frac{2}{c}} \right) \left(\frac{\sqrt{c-1}}{\sqrt{c+1}} \right)} \right)} \right. \right. \right.$$

✓ **Maple** : cpu = 0.21 (sec), leaf count = 48

$$\left\{ x + \int^{y(x)} 2 \frac{\cos(_a a)}{b(c \cos(_a a) - 1) \sqrt{2 \cos(2_a a) - 2 + 4 c \cos(_a a)}} d_a + _C1 = 0 \right\}$$

2.361 ODE No. 361

$$y'(x)(-\sin(y(x)) + x \sin(xy(x)) + \cos(y(x) + x)) + y(x) \sin(xy(x)) + \cos(y(x) + x) + \cos(x) = 0$$

✓ **Mathematica** : cpu = 0.207982 (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 = 0.26 (sec), leaf count = 22

$$\{-\cos(xy(x)) + \sin(y(x) + x) + \sin(x) + \cos(y(x)) + _C1 = 0\}$$

2.362 ODE No. 362

$$y'(x) (x^2 y(x) \sin(xy(x)) - 4x) - y(x) + xy(x)^2 \sin(xy(x)) = 0$$

✓ **Mathematica** : cpu = 0.0691284 (sec), leaf count = 23

$$\text{Solve}[-4 \log(y(x)) - \cos(xy(x)) - \log(x) = c_1, y(x)]$$

✓ **Maple** : cpu = 0.217 (sec), leaf count = 23

$$\left\{ y(x) = \frac{1}{x} \text{RootOf} \left(-_Z + e^{-\frac{\cos(_Z)}{4}} _C1 x^{\frac{3}{4}} \right) \right\}$$

2.363 ODE No. 363

$$(xy'(x) - y(x)) \cos^2 \left(\frac{y(x)}{x} \right) + x = 0$$

✓ **Mathematica** : cpu = 0.0364151 (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 = 0.07 (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

$$xy'(x) \left(y(x) \sin \left(\frac{y(x)}{x} \right) - x \cos \left(\frac{y(x)}{x} \right) \right) - y(x) \left(y(x) \sin \left(\frac{y(x)}{x} \right) + x \cos \left(\frac{y(x)}{x} \right) \right) = 0$$

✓ **Mathematica** : cpu = 0.0641222 (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 = 0.102 (sec), leaf count = 23

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

2.365 ODE No. 365

$$(y(x)f(x^2 + y(x)^2) - x)y'(x) + xf(x^2 + y(x)^2) + y(x) = 0$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.293 (sec), leaf count = 42

$$\left\{ y(x) = x \left(\tan \left(\text{RootOf} \left(-2_Z - \int \frac{x^2((\tan(_Z))^2+1)}{(\tan(_Z))^2} \frac{f(_a)}{_a} d_a + 2_C1 \right) \right) \right)^{-1} \right\}$$

2.366 ODE No. 366

$$f(ay(x)^2 + x^2)(ay(x)y'(x) + x) - xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 202.389 (sec), leaf count = 88

Solve $\left[\int_1^{y(x)} \left(- \int_1^x (1 - 2aK[1]K[2]f'(aK[2]^2 + K[1]^2)) dK[1] - aK[2]f(aK[2]^2 + x^2) + x \right) dK[2] + \dots \right]$

✓ **Maple** : cpu = 0.073 (sec), leaf count = 45

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

2.367 ODE No. 367

$$f(x^c y(x))(bxy'(x) - a) - x^a y(x)^b (cy(x) + xy'(x)) = 0$$

✗ **Mathematica** : cpu = 13.5135 (sec), leaf count = 0 , could not solve

`DSolve[-(x^a*y[x]^b*(c*y[x] + x*Derivative[1][y][x])) + f[x^c*y[x]]*(-a + b*x*Derivati`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(f(x^c*y(x))*(b*x*diff(y(x),x)-a)-x^a*y(x)^b*(x*diff(y(x),x)+c*y(x)) = 0,y(x))`

2.368 ODE No. 368

$$ay(x) + bx^2 + y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.369 ODE No. 369

$$-a^2 + y'(x)^2 + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0490996 (sec), leaf count = 107

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

✓ **Maple** : cpu = 0.706 (sec), leaf count = 68

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

2.370 ODE No. 370

$$-f(x)^2 + y'(x)^2 + y(x)^2 = 0$$

✗ **Mathematica** : cpu = 17.2047 (sec), leaf count = 0 , could not solve

`DSolve[-f[x]^2 + y[x]^2 + Derivative[1][y][x]^2 == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)^2+y(x)^2-f(x)^2 = 0,y(x))`

2.371 ODE No. 371

$$y'(x)^2 - y(x)^3 + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0265587 (sec), leaf count = 37

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

✓ **Maple** : cpu = 0.665 (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

$$ay(x) + b + y'(x)^2 - 4y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.00487112 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow \wp(x - c_1; a, b) \right\}, \left\{ y(x) \rightarrow \wp(x + c_1; a, b) \right\} \right\}$$

✓ **Maple** : cpu = 0.638 (sec), leaf count = 271

$$\left\{ y(x) = \frac{1}{6} \sqrt[3]{27b + 3\sqrt{-3a^3 + 81b^2}} + \frac{a}{2} \frac{1}{\sqrt[3]{27b + 3\sqrt{-3a^3 + 81b^2}}}, y(x) = -\frac{1}{12} \sqrt[3]{27b + 3\sqrt{-3a^3 + 81b^2}} \right\}$$

2.373 ODE No. 373

$$a^2 y(x)^2 (\log^2(y(x)) - 1) + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0966512 (sec), leaf count = 71

$$\left\{ \left\{ y(x) \rightarrow e^{\frac{1}{2}(e^{-c_1+iax}+e^{c_1-iax})} \right\}, \left\{ y(x) \rightarrow \exp \left(\frac{1}{2}(e^{-c_1-iax} + e^{c_1+iax}) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.267 (sec), leaf count = 47

$$\left\{ y(x) = (e^{\sin(-C1 a-ax)})^{-1}, y(x) = e^{\text{RootOf}(a^2(e^{-Z})^2(-Z^2-1))}, y(x) = e^{\sin(-C1 a-ax)} \right\}$$

2.374 ODE No. 374

$$y'(x)^2 - 2y'(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0649606 (sec), leaf count = 73

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

✓ **Maple** : cpu = 0.651 (sec), leaf count = 85

$$\left\{ x - (y(x))^{-1} - \frac{1}{y(x)} ((y(x))^2 + 1)^{\frac{3}{2}} + y(x) \sqrt{(y(x))^2 + 1} + \text{Arcsinh}(y(x)) - _C1 = 0, x - (y(x))^{-1} + \dots \right\}$$

2.375 ODE No. 375

$$ay'(x) + bx + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0439594 (sec), leaf count = 71

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(-\frac{(a^2 - 4bx)^{3/2}}{6b} - ax \right) + c_1 \right\}, \left\{ y(x) \rightarrow \frac{1}{2} \left(\frac{(a^2 - 4bx)^{3/2}}{6b} - ax \right) + c_1 \right\} \right\}$$

✓ **Maple** : cpu = 0.641 (sec), leaf count = 49

$$\left\{ y(x) = -\frac{ax}{2} - \frac{1}{12b} (a^2 - 4bx)^{\frac{3}{2}} + _C1, y(x) = -\frac{ax}{2} + \frac{1}{12b} (a^2 - 4bx)^{\frac{3}{2}} + _C1 \right\}$$

2.376 ODE No. 376

$$ay'(x) + by(x) + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.311751 (sec), leaf count = 110

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{\sqrt{a^2 - 4\#1b} + a \log(\sqrt{a^2 - 4\#1b} - a)}{2b} \& \right] \left[c_1 + \frac{x}{2} \right] \right\}, \left\{ y(x) \rightarrow \text{InverseFunction} \left[\frac{\sqrt{a^2 - 4\#1b} - a \log(\sqrt{a^2 - 4\#1b} - a)}{2b} \& \right] \left[c_1 + \frac{x}{2} \right] \right\} \right\}$$

✓ **Maple** : cpu = 1.165 (sec), leaf count = 215

$$\left\{ y(x) = -\frac{1}{4b} e^{-\frac{1}{2a}} \left(2 \text{alambertW} \left(2 \frac{e^{-1}}{a} e^{-\frac{C1b}{a}} \frac{1}{\sqrt{-b-1}} \left(e^{\frac{bx}{a}} \right)^{-1} \right) + a \ln \left(-\frac{1}{4b} \right) - 2 _C1 b + 2bx + 2a \right) \left(e^{-\frac{1}{2a}} \left(2 \text{alambertW} \left(2 \frac{e^{-1}}{a} e^{-\frac{C1b}{a}} \right) \right) \right)^{-1} \right\}$$

2.377 ODE No. 377

$$y'(x)^2 + (x - 2)y'(x) - y(x) + 1 = 0$$

✓ **Mathematica** : cpu = 0.00504519 (sec), leaf count = 19

$$\{ \{ y(x) \rightarrow c_1 x + c_1^2 - 2c_1 + 1 \} \}$$

✓ **Maple** : cpu = 0.624 (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

$$(a + x)y'(x) + y'(x)^2 - y(x) = 0$$

✓ **Mathematica** : cpu = 0.00582627 (sec), leaf count = 18

$$\{ \{ y(x) \rightarrow a c_1 + c_1 x + c_1^2 \} \}$$

✓ **Maple** : cpu = 0.608 (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

$$y'(x)^2 - (x + 1)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.00507623 (sec), leaf count = 18

$$\{ \{ y(x) \rightarrow c_1 x - c_1^2 + c_1 \} \}$$

✓ **Maple** : cpu = 0.602 (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

$$y'(x)^2 + 2xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.430306 (sec), leaf count = 1757

$$\left\{ \left\{ y(x) \rightarrow -\frac{x^2}{4} - \frac{1}{4} \sqrt[3]{x^6 - 20 \cosh(3c_1)x^3 - 20 \sinh(3c_1)x^3 - 8 \cosh(6c_1) - 8 \sinh(6c_1) + 8\sqrt{-\cosh(3c_1)}} \right. \right.$$

✓ **Maple** : cpu = 0.62 (sec), leaf count = 690

$$\left\{ y(x) = \left(\frac{1}{2} \sqrt[3]{6_C1 - x^3 + 2\sqrt{-3x^3_C1 + 9_C1^2}} + \frac{x^2}{2} \frac{1}{\sqrt[3]{6_C1 - x^3 + 2\sqrt{-3x^3_C1 + 9_C1^2}}} \right) \right.$$

2.381 ODE No. 381

$$y'(x)^2 - 2xy'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.440223 (sec), leaf count = 1757

$$\left\{ \left\{ y(x) \rightarrow \frac{x^2}{4} + \frac{1}{4} \sqrt[3]{x^6 - 20 \cosh(3c_1)x^3 - 20 \sinh(3c_1)x^3 - 8 \cosh(6c_1) - 8 \sinh(6c_1) + 8\sqrt{-\cosh(3c_1)}} \right. \right.$$

✓ **Maple** : cpu = 0.62 (sec), leaf count = 656

$$\left\{ y(x) = - \left(\frac{1}{2} \sqrt[3]{-6_C1 + x^3 + 2\sqrt{-3x^3_C1 + 9_C1^2}} + \frac{x^2}{2} \frac{1}{\sqrt[3]{-6_C1 + x^3 + 2\sqrt{-3x^3_C1 + 9_C1^2}}} \right) \right.$$

2.382 ODE No. 382

$$axy'(x) - bx^2 - c + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.261295 (sec), leaf count = 201

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(\frac{1}{2} x \sqrt{a^2 x^2 + 4bx^2 + 4c} + \frac{2c \log(\sqrt{a^2 + 4b} \sqrt{a^2 x^2 + 4bx^2 + 4c} + a^2 x + 4bx)}{\sqrt{a^2 + 4b}} - \frac{ax^2}{2} \right) + c_1 \right\} \right\}$$

✓ **Maple** : cpu = 0.633 (sec), leaf count = 146

$$\left\{ y(x) = -\frac{ax^2}{4} - \frac{x}{4} \sqrt{(a^2 + 4b)x^2 + 4c} - c \ln(\sqrt{a^2 + 4b} + \sqrt{(a^2 + 4b)x^2 + 4c}) \frac{1}{\sqrt{a^2 + 4b}} + -C1, y(x) \right\}$$

2.383 ODE No. 383

$$axy'(x) + by(x) + cx^2 + y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 300. (sec), leaf count = 0 , timed out

\$Aborted

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.384 ODE No. 384

$$(ax + b)y'(x) - ay(x) + c + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 2.06615 (sec), leaf count = 183

$$\left\{ \left\{ y(x) \rightarrow \frac{-2\sqrt{-a^4 e^{2c_1} x^2 - 2a^4 e^{2c_1} x + a^4 (-e^{2c_1})} + 2a^3 x + a^3 - 2a^2 b x - ab^2 - a e^{2c_1} + 4ac}{4a^2} \right\}, \left\{ y(x) \rightarrow \dots \right\} \right\}$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 50

$$\left\{ y(x) = \frac{-a^2 x^2 - 2abx - b^2 + 4c}{4a}, y(x) = -C1 x + \frac{-C1^2 + -C1 b + c}{a} \right\}$$

2.385 ODE No. 385

$$-2x^2y'(x) + y'(x)^2 + 2xy(x) = 0$$

✗ **Mathematica** : cpu = 300.021 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.281 (sec), leaf count = 169

$$\left\{ y(x) = \frac{x^4 - (\text{RootOf}(x^{16} - 12_Z^2x^{12} + 16_Z^3x^{10} + 30_Z^4x^8 - 96_Z^5x^6 + 100_Z^6x^4 - 48_Z^7x^2))}{2x} \right\}$$

2.386 ODE No. 386

$$ax^3y'(x) - 2ax^2y(x) + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.196999 (sec), leaf count = 56

$$\left\{ \left\{ y(x) \rightarrow 2ae^{2c_1}(4e^{2c_1} + x^2) \right\}, \left\{ y(x) \rightarrow \frac{e^{2c_1}(e^{2c_1} - 2ax^2)}{8a} \right\} \right\}$$

✓ **Maple** : cpu = 0.416 (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

$$y'(x)^2 + e^x(y'(x) - y(x)) = 0$$

✓ **Mathematica** : cpu = 0.521971 (sec), leaf count = 134

$$\left\{ \text{Solve} \left[-\frac{-e^{x/2}\sqrt{4y(x) + e^x} - 4y(x) \log(\sqrt{4y(x) + e^x} + e^{x/2}) + e^x}{2y(x)} = c_1, y(x) \right], \text{Solve} \left[2 \log(y(x)) - e^{x/2} \sqrt{4y(x) + e^x} = c_1, y(x) \right] \right\}$$

✓ **Maple** : cpu = 0.639 (sec), leaf count = 115

$$\left\{ -\frac{e^x}{2y(x)} + \ln(y(x)) + 2 \text{Artanh}\left(\sqrt{e^{2x} + 4y(x)e^{-x}}\right) + \frac{1}{2y(x)}\sqrt{e^{2x} + 4y(x)e^{-x}} - _C1 = 0, -2 \text{Arctanh}\left(\frac{e^{x/2}\sqrt{4y(x) + e^x}}{e^{x/2}\sqrt{4y(x) + e^x} + e^{x/2}}\right) + \ln\left(\frac{e^{x/2}\sqrt{4y(x) + e^x} + e^{x/2}}{e^{x/2}\sqrt{4y(x) + e^x} + e^{x/2}}\right) - _C1 = 0 \right\}$$

2.388 ODE No. 388

$$y'(x)^2 - 2y(x)y'(x) - 2x = 0$$

✓ **Mathematica** : cpu = 0.619687 (sec), leaf count = 53

$$\text{Solve} \left[\left\{ x = \frac{c_1 \sqrt{K\$1180705}}{\sqrt{K\$1180705^2 + 1}} + \frac{K\$1180705 \sinh^{-1}(K\$1180705)}{2\sqrt{K\$1180705^2 + 1}}, y(x) = \frac{K\$1180705}{2} - \frac{x}{K\$1180705} \right\}, \right.$$

✓ **Maple** : cpu = 0.08 (sec), leaf count = 217

$$\left\{ -C1 \left(-2y(x) + 2\sqrt{(y(x))^2 + 2x} \right) \frac{1}{\sqrt{2(y(x))^2 + 2x - 2y(x)\sqrt{(y(x))^2 + 2x + 1}}} + x - \frac{1}{2} \left(-y(x) + \dots \right) \right.$$

2.389 ODE No. 389

$$y'(x)^2 - (4y(x) + 1)y'(x) + y(x)(4y(x) + 1) = 0$$

✓ **Mathematica** : cpu = 0.0445709 (sec), leaf count = 57

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{4}e^{x-4c_1} (2e^{2c_1} - e^x) \right\}, \left\{ y(x) \rightarrow \frac{1}{4}e^{2c_1+x} (e^{2c_1+x} - 2) \right\} \right\}$$

✓ **Maple** : cpu = 0.54 (sec), leaf count = 193

$$\left\{ y(x) = -\frac{1}{4}, y(x) = -\frac{(e^x)^2}{2-C1} \left(-\frac{C1}{(e^x)^2} \left(\sqrt{-\frac{C1}{(e^x)^2}} - 2 \right) \frac{1}{\sqrt{-\frac{C1}{(e^x)^2}}} + \frac{C1}{(e^x)^2} + 2 \right), y(x) = \frac{(e^x)^2}{2-C1} \left(\frac{C1}{(e^x)^2} \right) \right.$$

2.390 ODE No. 390

$$ay(x)y'(x) - bx - c + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 1.76594 (sec), leaf count = 142

$$\text{Solve} \left[\left\{ x = c_1 e^{b \left(\frac{\log(K\$1181115)}{b} - \frac{\log(b-aK\$1181115^2)}{2b} \right)} + e^{b \left(\frac{\log(K\$1181115)}{b} - \frac{\log(b-aK\$1181115^2)}{2b} \right)} \left(\frac{\tan^{-1} \left(\frac{\sqrt{aK\$1181115}}{\sqrt{b-aK\$1181115^2}} \right)}{\sqrt{a}} \right) \right. \right.$$

✓ **Maple** : cpu = 0.258 (sec), leaf count = 416

$$\left\{ y(x) = 2 \frac{b e^{\text{RootOf}(\sqrt{a} C1 b e^2 - Z - a e^2 - Z b x - e^2 - Z Z b - a e^2 - Z c + \sqrt{a} C1 b^2 + a b^2 x - Z b^2 + a b c)} x}{(e^{2 \text{RootOf}(\sqrt{a} C1 b e^2 - Z - a e^2 - Z b x - e^2 - Z Z b - a e^2 - Z c + \sqrt{a} C1 b^2 + a b^2 x - Z b^2 + a b c)} + b) \sqrt{a}} + 2 \frac{e^{\text{RootOf}(\sqrt{a} C1 b e^2 - Z - a e^2 - Z b x - e^2 - Z Z b - a e^2 - Z c + \sqrt{a} C1 b^2 + a b^2 x - Z b^2 + a b c)}}{(e^{2 \text{RootOf}(\sqrt{a} C1 b e^2 - Z - a e^2 - Z b x - e^2 - Z Z b - a e^2 - Z c + \sqrt{a} C1 b^2 + a b^2 x - Z b^2 + a b c)} + b) \sqrt{a}} \right\}$$

2.391 ODE No. 391

$$y'(x)(ay(x) + bx) + abxy(x) + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.00627169 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-ax} \right\}, \left\{ y(x) \rightarrow c_1 - \frac{bx^2}{2} \right\} \right\}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 22

$$\left\{ y(x) = C1 e^{-ax}, y(x) = -\frac{bx^2}{2} + C1 \right\}$$

2.392 ODE No. 392

$$y(x)^2 \log(ay(x)) - xy(x)y'(x) + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.246177 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow \frac{e^{\frac{c_1 x}{2} - \frac{c_1^2}{4}}}{a} \right\} \right\}$$

✓ **Maple** : cpu = 0.458 (sec), leaf count = 50

$$\left\{ y(x) = \frac{1}{a} e^{\frac{x^2}{4}}, y(x) = \frac{1}{e^{-C1^2} e^{-C1 x a}}, y(x) = \frac{e^{-C1 x}}{e^{-C1^2} a} \right\}$$

2.393 ODE No. 393

$$y'(x)^2 + 2y(x) \cot(x)y'(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0314301 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow c_1 \csc^2 \left(\frac{x}{2} \right) \right\}, \left\{ y(x) \rightarrow c_1 \sec^2 \left(\frac{x}{2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.119 (sec), leaf count = 85

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

2.394 ODE No. 394

$$-(g(x) - f(x)^2) e^{-2 \int_a^x f(xp) dxp} + 2f(x)y(x)y'(x) + g(x)y(x)^2 + y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 53.4579 (sec), leaf count = 0 , could not solve

`DSolve[-((-f[x]^2 + g[x])/E^(2*Integrate[f[xp], {xp, a, x}]))) + g[x]*y[x]^2 + 2*f[x]*y[x]*Derivative[1][y][x] + Derivative[1][y][x]^2 == 0, y[x], x]`

✓ **Maple** : cpu = 5.835 (sec), leaf count = 310

$$\left\{ y(x) = -\tan \left(\frac{1}{2 \cos(2) + 2} \left(-2 - C1 \cos(2) + \sqrt{2} \int \left(e^{\int_a^x f(xp) dxp} \right)^2 \sqrt{-\frac{\cos(4) (f(x))^2}{(e^{\int_a^x f(xp) dxp})^4} - 4 \frac{\cos(2) (f(x))^2}{(e^{\int_a^x f(xp) dxp})^4}} \right) \right) \right.$$

2.395 ODE No. 395

$$2f(x)y(x)y'(x) + g(x)y(x)^2 + h(x) + y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 32.1927 (sec), leaf count = 0 , could not solve

`DSolve[h[x] + g[x]*y[x]^2 + 2*f[x]*y[x]*Derivative[1][y][x] + Derivative[1][y][x]^2 == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x), x)^2 + 2*f(x)*y(x)*diff(y(x), x) + g(x)*y(x)^2 + h(x) = 0, y(x))`

2.396 ODE No. 396

$$(y(x) - x)y(x)y'(x) + y'(x)^2 - xy(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.0100024 (sec), leaf count = 29

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

✓ **Maple** : cpu = 0.013 (sec), leaf count = 20

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

2.397 ODE No. 397

$$-2x^3y(x)^2y'(x) - 4x^2y(x)^3 + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.432204 (sec), leaf count = 143

$$\left\{ \text{Solve} \left[\frac{x\sqrt{x^4y(x) + 4y(x)^3} \sinh^{-1} \left(\frac{1}{2}x^2\sqrt{y(x)} \right)}{2\sqrt{x^2y(x)^3(x^4y(x) + 4)}} - \frac{1}{4} \log(y(x)) = c_1, y(x) \right], \text{Solve} \left[\frac{xy(x)^{3/2}\sqrt{x^4y(x)}}{2\sqrt{x^2y(x)}} \right] \right\}$$

✓ **Maple** : cpu = 0.35 (sec), leaf count = 131

$$\left\{ y(x) = -4x^{-4}, y(x) = \frac{(\sqrt{2x^2 - C1} - 2) _C1^2}{2 _C1^2 x^4 - 4}, y(x) = -\frac{(\sqrt{2x^2 - C1} + 2) _C1^2}{2 _C1^2 x^4 - 4}, y(x) = -2 \frac{\sqrt{2x^2 - C1}}{_C1^2 (-2)} \right\}$$

2.398 ODE No. 398

$$y'(x)^2 - 3xy(x)^{2/3}y'(x) + 9y(x)^{5/3} = 0$$

✓ **Mathematica** : cpu = 0.798309 (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 = 2.427 (sec), leaf count = 138

$$\left\{ \ln(x) + \frac{1}{6} \ln\left(\frac{y(x)}{x^6}\right) - \frac{1}{6} \ln\left(4 \sqrt[3]{\frac{y(x)}{x^6}} - 1\right) - 1 \sqrt{-4 \left(\frac{y(x)}{x^6}\right)^{5/3} + \left(\frac{y(x)}{x^6}\right)^{4/3}} \operatorname{Artanh}\left(\sqrt{-4 \sqrt[3]{\frac{y(x)}{x^6}}}\right) \right\}$$

2.399 ODE No. 399

$$2y'(x)^2 + (x-1)y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.00513094 (sec), leaf count = 20

$$\{\{y(x) \rightarrow c_1 x + 2c_1^2 - c_1\}\}$$

✓ **Maple** : cpu = 0.022 (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

$$-2x^2y'(x) + 2y'(x)^2 + 3xy(x) = 0$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.195 (sec), leaf count = 117

$$\left\{ y(x) = \frac{x^3}{6}, y(x) = \frac{1}{3_C1} \left(x^3 - C1 + x \left(-x^2 - C1 + \sqrt{-6_C1 x} \right) + 3 \right), y(x) = \frac{1}{3_C1} \left(x^3 - C1 - x \left(x^2 \right) \right) \right\}$$

2.401 ODE No. 401

$$3y'(x)^2 - 2xy'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.338547 (sec), leaf count = 1093

$$\{ \{y(x) \rightarrow \text{Root}[-16e^{6c_1}x^6 + 3\#1^4x^4 + 144e^{6c_1}\#1x^4 - 24\#1^5x^2 - 378e^{6c_1}\#1^2x^2 + 243e^{12c_1} + 48\#1^6 + 2$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 656

$$\left\{ y(x) = -3 \left(1/6 \sqrt[3]{-54_C1 + x^3 + 6 \sqrt{-3x^3_C1 + 81_C1^2}} + 1/6 \frac{x^2}{\sqrt[3]{-54_C1 + x^3 + 6 \sqrt{-3x^3_C1 + 81_C1^2}}} \right) \right.$$

2.402 ODE No. 402

$$x^2 + 4xy'(x) + 3y'(x)^2 - y(x) = 0$$

✗ **Mathematica** : cpu = 300.017 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.184 (sec), leaf count = 117

$$\left\{ y(x) = -\frac{x^2}{3}, y(x) = -\frac{5_C1^2x^2 + 2_C1x(-_C1x + \sqrt{3}) - 3}{12_C1^2}, y(x) = -\frac{5_C1^2x^2 - 2_C1x(-_C1x + \sqrt{3}) - 3}{12_C1^2} \right.$$

2.403 ODE No. 403

$$ay'(x)^2 + by'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.300772 (sec), leaf count = 116

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\frac{\sqrt{4\#1a + b^2} + b \log(\sqrt{4\#1a + b^2} - b)}{2a} \& \right] \left[\frac{x}{2a} + c_1 \right] \right\}, \left\{ y(x) \rightarrow \text{InverseFunction} \left[\frac{\sqrt{4\#1a + b^2} - b \log(\sqrt{4\#1a + b^2} - b)}{2a} \& \right] \left[\frac{x}{2a} + c_1 \right] \right\} \right.$$

✓ **Maple** : cpu = 0.589 (sec), leaf count = 197

$$\left\{ y(x) = \frac{1}{4a} e^{-\frac{1}{2b} \left(2 \text{blambert}W \left(2 \frac{e^{-1}}{b\sqrt{a-1}} e^{\frac{x}{b}} \left(e^{-\frac{C1}{b}} \right)^{-1} \right) + b \ln\left(\frac{1}{4a}\right) + 2_C1 + 2b - 2x \right)} \left(e^{-\frac{1}{2b} \left(2 \text{blambert}W \left(2 \frac{e^{-1}}{b\sqrt{a-1}} e^{\frac{x}{b}} \left(e^{-\frac{C1}{b}} \right)^{-1} \right) + b \ln\left(\frac{1}{4a}\right) + 2_C1 + 2b - 2x \right)} \right)^{-1} \right.$$

2.404 ODE No. 404

$$ay'(x)^2 + bx^2y'(x) + cxy(x) = 0$$

X Mathematica : cpu = 300.002 (sec), leaf count = 0 , timed out

Aborted

✓ Maple : cpu = 0.26 (sec), leaf count = 499

$$\left\{ \int_{-b}^x -1 \left(-b - a^2 + \sqrt{-a^4b^2 - 4 - aacy(x)} \right) \left(-b - a^3 + \sqrt{-a^4b^2 - 4 - aacy(x)} - a - 6ay(x) \right)^{-1} d_a + \right.$$

2.405 ODE No. 405

$$ay'(x)^2 + y(x)y'(x) - x = 0$$

✓ Mathematica : cpu = 0.969184 (sec), leaf count = 53

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

✓ Maple : cpu = 0.224 (sec), leaf count = 380

$$\left\{ -C_1 \left(-y(x) + \sqrt{4ax + (y(x))^2} \right) \frac{1}{\sqrt{\frac{1}{a} \left(-y(x) + \sqrt{4ax + (y(x))^2} + 2a \right)}} \frac{1}{\sqrt{\frac{1}{a} \left(-y(x) + \sqrt{4ax + (y(x))^2} \right)}} \right.$$

2.406 ODE No. 406

$$ay'(x)^2 - y(x)y'(x) - x = 0$$

✓ Mathematica : cpu = 0.805152 (sec), leaf count = 49

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

✓ **Maple** : cpu = 0.081 (sec), leaf count = 266

$$\left\{ -C1 \left(-y(x) + \sqrt{4ax + (y(x))^2} \right) \frac{1}{\sqrt{-\frac{1}{a^2} \left(2y(x) \sqrt{4ax + (y(x))^2} - 4a^2 - 4ax - 2(y(x))^2 \right)}} + x - \right.$$

2.407 ODE No. 407

$$xy'(x)^2 - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0175918 (sec), leaf count = 51

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}(-4c_1\sqrt{x} + c_1^2 + 4x) \right\}, \left\{ y(x) \rightarrow \frac{1}{4}(4c_1\sqrt{x} + c_1^2 + 4x) \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (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

$$xy'(x)^2 - 2y(x) + x = 0$$

✓ **Mathematica** : cpu = 0.532571 (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 = 0.058 (sec), leaf count = 73

$$\left\{ y(x) = \left(\frac{1}{2} \left(\text{lambertW} \left(\frac{1}{-C1} \sqrt{-C1 x} \right) + 1 \right) \right)^2 \left(\text{lambertW} \left(\frac{1}{-C1} \sqrt{-C1 x} \right) \right)^{-2} + \frac{1}{2} \right\} x, y(x) = \left(\frac{1}{2} \right.$$

2.409 ODE No. 409

$$xy'(x)^2 - 2y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 30.7758 (sec), leaf count = 66

$$\text{Solve} \left[\left\{ x = \frac{y(\text{K\$1239966}) + 2\text{K\$1239966}}{\text{K\$1239966}^2}, y(x) = c_1 e^{2(\log(\text{K\$1239966}) - \log(1 - \text{K\$1239966}))} + e^{2(\log(\text{K\$1239966}) - \log(1 - \text{K\$1239966}))} \right\} \right]$$

✓ **Maple** : cpu = 0.06 (sec), leaf count = 63

$$\left\{ y(x) = x e^{2 \text{RootOf}(-x e^2 - Z + 2 x e^{-Z} + 2 e^{-Z} + C1 - 2 Z - x)} - 2 e^{\text{RootOf}(-x e^2 - Z + 2 x e^{-Z} + 2 e^{-Z} + C1 - 2 Z - x)} \right\}$$

2.410 ODE No. 410

$$xy'(x)^2 + 4y'(x) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 31.5645 (sec), leaf count = 80

$$\text{Solve} \left[\left\{ x = -\frac{2(2\text{K\$1240300} - y(\text{K\$1240300}))}{\text{K\$1240300}^2}, y(x) = c_1 e^{-4\left(\frac{1}{2} \log(2 - \text{K\$1240300}) - \frac{\log(\text{K\$1240300})}{2}\right)} + 4e^{-4\left(\frac{1}{2} \log(2 - \text{K\$1240300}) - \frac{\log(\text{K\$1240300})}{2}\right)} \right\} \right]$$

✓ **Maple** : cpu = 0.062 (sec), leaf count = 64

$$\left\{ y(x) = \frac{x e^{2 \text{RootOf}(-x e^2 - Z + 4 x e^{-Z} - 4 e^{-Z} + C1 + 8 Z - 4 x)}}{2} + 2 e^{\text{RootOf}(-x e^2 - Z + 4 x e^{-Z} - 4 e^{-Z} + C1 + 8 Z - 4 x)} \right\}$$

2.411 ODE No. 411

$$xy'(x)^2 + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.552009 (sec), leaf count = 181

$$\left\{ \text{Solve} \left[\frac{\left(\sqrt{\frac{4y(x)}{x} + 1} - 1 \right) \left(\left(\sqrt{\frac{4y(x)}{x} + 1} - 1 \right) \log \left(\sqrt{\frac{4y(x)}{x} + 1} - 1 \right) - 1 \right)}{2 \left(-\frac{2y(x)}{x} + \sqrt{\frac{4y(x)}{x} + 1} - 1 \right)} = c_1 + \frac{\log(x)}{2}, y(x) \right], \text{Solve} \left[\dots \right] \right\}$$

✓ **Maple** : cpu = 0.045 (sec), leaf count = 69

$$\left\{ y(x) = \left(\frac{1}{4} \left(\text{lambertW} \left(-\frac{1}{2} \frac{1}{\sqrt{\frac{C1}{x}}} \right) \right)^{-2} + \frac{1}{2} \left(\text{lambertW} \left(-\frac{1}{2} \frac{1}{\sqrt{\frac{C1}{x}}} \right) \right)^{-1} \right) x, y(x) = \left(\frac{1}{4} \left(\text{lambertW} \left(-\frac{1}{2} \frac{1}{\sqrt{\frac{C1}{x}}} \right) \right)^{-2} + \frac{1}{2} \left(\text{lambertW} \left(-\frac{1}{2} \frac{1}{\sqrt{\frac{C1}{x}}} \right) \right)^{-1} \right) x \right.$$

2.412 ODE No. 412

$$a + xy'(x)^2 + y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 29.4232 (sec), leaf count = 16145

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{-\frac{4ax}{3} - \frac{1}{2} \sqrt{-\frac{64}{9} a^2 x^2 + \frac{\cosh(3c_1)}{81ax} + \frac{\sinh(3c_1)}{81ax} + \sqrt[3]{4529848320a^6 \cosh(6c_1) x^6 + 4529848320a^6 \sinh(6c_1) x^6}}}} \right. \right.$$

✓ **Maple** : cpu = 0.043 (sec), leaf count = 146

$$\left\{ -x^2 - C1 \left(\frac{1}{x} \left(-y(x) + \sqrt{(y(x))^2 - 4ax} \right) \right)^{\frac{3}{2}} \left(-y(x) + \sqrt{(y(x))^2 - 4ax} \right)^{-2} + x + \frac{4ax^2}{3} \left(-y(x) + \sqrt{(y(x))^2 - 4ax} \right) \right.$$

2.413 ODE No. 413

$$-x^2 + xy'(x)^2 + y(x)y'(x) = 0$$

✗ **Mathematica** : cpu = 300.001 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.197 (sec), leaf count = 337

$$\left\{ \int_{-b}^x -\frac{1}{-a} \left(y(x) + \sqrt{4-a^3 + (y(x))^2} \right) \left(\sqrt{4-a^3 + (y(x))^2} + 4y(x) \right)^{-1} d_a + \int^{y(x)} -2 \frac{1}{\sqrt{4x^3 + f^2}} d_f \right.$$

2.414 ODE No. 414

$$x^3 + xy'(x)^2 + y(x)y'(x) = 0$$

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

Kernel Crash

✓ Maple : cpu = 0.2 (sec), leaf count = 337

$$\left\{ \int_{-b}^x -\frac{1}{-a} \left(y(x) + \sqrt{-4_a^4 + (y(x))^2} \right) \left(\sqrt{-4_a^4 + (y(x))^2} + 5y(x) \right)^{-1} d_a + \int^{y(x)} 2 \frac{1}{\sqrt{-4x^4 + \dots}} \right.$$

2.415 ODE No. 415

$$y(x)y'(x) + xy'(x)^2 - y(x)^4 = 0$$

✓ Mathematica : cpu = 0.210657 (sec), leaf count = 133

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{\tanh^2 \left(\frac{1}{2} (c_1 - \log(x)) \right) - 1}}{2\sqrt{x}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{\tanh^2 \left(\frac{1}{2} (c_1 - \log(x)) \right) - 1}}{2\sqrt{x}} \right\}, \left\{ y(x) \rightarrow -\sqrt{\dots} \right\} \right.$$

✓ Maple : cpu = 0.193 (sec), leaf count = 95

$$\left\{ y(x) = -\frac{1}{2} \frac{1}{\sqrt{-x}}, y(x) = \frac{1}{2} \frac{1}{\sqrt{-x}}, y(x) = -\frac{1}{2x} \sqrt{-\left(\tanh \left(-\frac{\ln(x)}{2} + \frac{C1}{2} \right) \right)^2 x + x \left(\tanh \left(-\frac{\ln(x)}{2} \right) \right)^2} \right.$$

2.416 ODE No. 416

$$xy'(x)^2 + (y(x) - 3x)y'(x) + y(x) = 0$$

X Mathematica : cpu = 303.551 (sec), leaf count = 0 , timed out

\$Aborted

✓ Maple : cpu = 0.065 (sec), leaf count = 136

$$\left\{ -\frac{C1}{x} \left(5x - y(x) + \sqrt{9x^2 - 10xy(x) + (y(x))^2} \right) \left(\frac{1}{x} \left(3x - y(x) + \sqrt{9x^2 - 10xy(x) + (y(x))^2} \right) \right) \right.$$

2.417 ODE No. 417

$$a + xy'(x)^2 - y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.401127 (sec), leaf count = 430

$$\left\{ \left\{ y(x) \rightarrow -\frac{8a^2}{4a - \sinh(c_1) - \cosh(c_1)} - \frac{\sqrt{16a^3 \sinh(c_1) + 16a^3 \cosh(c_1) - 8a^2x \sinh(c_1) - 8a^2x \cosh(c_1)}}{4a - \sinh(c_1) - \cosh(c_1)} \right\} \right.$$

✓ **Maple** : cpu = 0.037 (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

$$ay(x) + xy'(x)^2 - y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.440878 (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 = 0.044 (sec), leaf count = 55

$$\left\{ y(x) = 0, y(x) = -a^2x \left(-\text{lambertW} \left(-\frac{xe}{-C1 a} \right) + 1 \right)^2 \left(-\left(-\text{lambertW} \left(-\frac{xe}{-C1 a} \right) + 1 \right) a + a \right)^{-1} \right\}$$

2.419 ODE No. 419

$$xy'(x)^2 + 2y(x)y'(x) - x = 0$$

✓ **Mathematica** : cpu = 1.52045 (sec), leaf count = 9073

✓ **Maple** : cpu = 0.046 (sec), leaf count = 110

$$\left\{ x - \frac{C1}{x} \left(-y(x) + \sqrt{(y(x))^2 + x^2} \right) \left(\frac{1}{x^2} \left(2x^2 + 6(y(x))^2 - 6y(x)\sqrt{(y(x))^2 + x^2} \right) \right)^{-\frac{2}{3}} = 0, \frac{C1}{x} \right\}$$

2.420 ODE No. 420

$$a + xy'(x)^2 - 2y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 1.74635 (sec), leaf count = 11757

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{\frac{16\sqrt[3]{27a^6x^{12} - 144a^5 \cosh(3c_1)x^9 - 144a^5 \sinh(3c_1)x^9 + 272a^4 \cosh(6c_1)x^6 + 272a^4 \sinh(6c_1)x^3}}{16\sqrt[3]{27a^6x^{12} - 144a^5 \cosh(3c_1)x^9 - 144a^5 \sinh(3c_1)x^9 + 272a^4 \cosh(6c_1)x^6 + 272a^4 \sinh(6c_1)x^3}}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.043 (sec), leaf count = 897

$$\left\{ y(x) = \frac{x}{2} \left(\frac{1}{6_C1} \sqrt[3]{-36a_C1^2 + 8x^3 + 12\sqrt{a(9a_C1^2 - 4x^3)}_C1} + \frac{2x^2}{3_C1} \sqrt[3]{-36a_C1^2 + 8x^3} \right) \right\}$$

2.421 ODE No. 421

$$xy'(x)^2 - 2y(x)y'(x) - x = 0$$

✓ **Mathematica** : cpu = 0.0315027 (sec), leaf count = 27

$$\{\{y(x) \rightarrow x \sinh(c_1 - \log(x))\}, \{y(x) \rightarrow x \sinh(c_1 + \log(x))\}\}$$

✓ **Maple** : cpu = 0.039 (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

$$xy'(x)^2 - 2y(x)y'(x) + 4x = 0$$

✓ **Mathematica** : cpu = 0.0465254 (sec), leaf count = 49

$$\left\{ \left\{ y(x) \rightarrow 2 \left(2x \sinh^2 \left(\frac{1}{2}(c_1 - \log(x)) \right) + x \right) \right\}, \left\{ y(x) \rightarrow 2 \left(2x \sinh^2 \left(\frac{1}{2}(c_1 + \log(x)) \right) + x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.042 (sec), leaf count = 29

$$\left\{ y(x) = -2x, y(x) = 2x, y(x) = -\frac{C1}{2} \left(-\frac{x^2}{C1^2} - 4 \right) \right\}$$

2.423 ODE No. 423

$$xy'(x)^2 - 2y(x)y'(x) + 2y(x) + x = 0$$

✓ **Mathematica** : cpu = 0.0772691 (sec), leaf count = 59

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

✓ **Maple** : cpu = 0.047 (sec), leaf count = 52

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

2.424 ODE No. 424

$$ay(x)y'(x) + bx + xy'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.384748 (sec), leaf count = 223

$$\left\{ \text{Solve} \left[\frac{-2a \tan^{-1} \left(\frac{ay(x)}{x \sqrt{4b - \frac{a^2 y(x)^2}{x^2}}} \right) + (a+2) \left(2 \tan^{-1} \left(\frac{(a+2)y(x)}{x \sqrt{4b - \frac{a^2 y(x)^2}{x^2}}} \right) - i \log \left(\frac{(a+1)y(x)^2}{x^2} + b \right) \right)}{8(a+1)} = c_1 + \right.$$

✓ **Maple** : cpu = 0.082 (sec), leaf count = 224

$$\left\{ \frac{-C1}{x} \left(-ay(x) + \sqrt{a^2 (y(x))^2 - 4bx^2} \right) \left(-\frac{a}{2x^2} \left(-a^2(y(x))^2 + \sqrt{a^2 (y(x))^2 - 4bx^2} ay(x) - a(y(x))^2 + \dots \right) \right) \right\}$$

2.425 ODE No. 425

$$(x+1)y'(x)^2 - (y(x)+x)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.265506 (sec), leaf count = 59

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

✓ **Maple** : cpu = 0.045 (sec), leaf count = 59

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

2.426 ODE No. 426

$$(3x+1)y'(x)^2 - 3(y(x)+2)y'(x) + 9 = 0$$

✓ **Mathematica** : cpu = 0.389446 (sec), leaf count = 310

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{9x^2 \sinh(c_1) + 9x^2 \cosh(c_1) - 210x \sinh(c_1) + 6x \sinh(2c_1) - 210x \cosh(c_1) + 6x \cosh(2c_1)}}{\sinh(c_1) + \cosh(c_1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.043 (sec), leaf count = 49

$$\left\{ y(x) = -2 - 2\sqrt{3x+1}, y(x) = -2 + 2\sqrt{3x+1}, y(x) = C1x + \frac{C1^2 - 6C1 + 9}{3C1} \right\}$$

2.427 ODE No. 427

$$(3x + 5)y'(x)^2 - (3y(x) + x)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.632087 (sec), leaf count = 479

$$\left\{ \left\{ y(x) \rightarrow \frac{-\sqrt{5}\sqrt{-144e^{\frac{4c_1}{3}}x^2 - 360e^{\frac{4c_1}{3}}x + 24e^{\frac{8c_1}{3}}x - 225e^{\frac{4c_1}{3}} + 30e^{\frac{8c_1}{3}} - e^{4c_1} + 6e^{\frac{4c_1}{3}}x + 15e^{\frac{4c_1}{3}} - 30x}}{18\left(e^{\frac{4c_1}{3}} + 5\right)} \right. \right.$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 67

$$\left\{ y(x) = \frac{(-3_C1^2 + _C1)x}{-3_C1 + 1} - 5 \frac{_C1^2}{-3_C1 + 1}, y(x) = \frac{x}{3} + \frac{10}{9} - \frac{2}{9}\sqrt{15x + 25}, y(x) = \frac{x}{3} + \frac{10}{9} + \frac{2}{9}\sqrt{15x + 25} \right.$$

2.428 ODE No. 428

$$y'(x)(-ay(x) + bx + c) + axy'(x)^2 - by(x) = 0$$

✗ **Mathematica** : cpu = 300.064 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.073 (sec), leaf count = 85

$$\left\{ y(x) = \frac{1}{a}(-bx + c - 2\sqrt{-bcx}), y(x) = \frac{1}{a}(-bx + c + 2\sqrt{-bcx}), y(x) = -\frac{(a_C1^2 + _C1 b)x}{-_C1 a - b} - \frac{c}{-_C1 a - b} \right.$$

2.429 ODE No. 429

$$-y'(x)(ay(x) - a + bx - b) + axy'(x)^2 + by(x) = 0$$

✗ **Mathematica** : cpu = 300.087 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.072 (sec), leaf count = 96

$$\left\{ y(x) = \frac{1}{a}(bx + a + b - 2\sqrt{abx + b^2x}), y(x) = \frac{1}{a}(bx + a + b + 2\sqrt{abx + b^2x}), y(x) = \frac{(-a_C1^2 + _C1 b)x}{-_C1 a + b} + \frac{c}{-_C1 a + b} \right.$$

2.430 ODE No. 430

$$a_0x + y'(x)(a_1x + b_1y(x) + c_1) + (a_2x + c_2)y'(x)^2 + b_0y(x) + c_0 = 0$$

✓ **Mathematica** : cpu = 265.237 (sec), leaf count = 478

$$\text{Solve} \left\{ \left\{ x = c_1(b_0 + b_1 \exp \left(\frac{(b_1(b_0 - a_1) + 2a_2b_0) \tan^{-1} \left(\frac{a_1 + 2\sqrt{4a_0(a_2+b_1)-a_1^2-2a_1b_0-b_0^2}}{\sqrt{4a_0(a_2+b_1)-a_1^2-2a_1b_0-b_0^2}} \right)}{(a_2 + b_1)\sqrt{4a_0(a_2 + b_1) - a_1^2 - 2a_1b_0 - b_0^2}} \right) - (2 \right. \right. \right.$$

✓ **Maple** : cpu = 1.112 (sec), leaf count = 9885

$$\left\{ \frac{-C_1}{a_2x + c_2} \left(-\frac{1}{2(a_2x + c_2)^2} \left(-\sqrt{-4a_0a_2x^2 + a_1^2x^2 + 2a_1b_1xy(x) - 4a_2b_0xy(x) + b_1^2(y(x))^2} \right) \right) \right\}$$

2.431 ODE No. 431

$$x^2y'(x)^2 - y(x)^4 + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0370346 (sec), leaf count = 111

$$\left\{ \left\{ y(x) \rightarrow \sqrt{\tan^2(c_1 - \log(x)) + 1}(-\cot(c_1 - \log(x))) \right\}, \left\{ y(x) \rightarrow \sqrt{\tan^2(c_1 - \log(x)) + 1} \cot(c_1 - \log(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.161 (sec), leaf count = 62

$$\left\{ y(x) = -1, y(x) = 1, y(x) = \frac{1}{\tan(-\ln(x) + C_1)} \sqrt{(\tan(-\ln(x) + C_1))^2 + 1}, y(x) = -\frac{1}{\tan(-\ln(x) + C_1)} \sqrt{(\tan(-\ln(x) + C_1))^2 + 1} \right\}$$

2.432 ODE No. 432

$$(a + xy'(x))^2 - 2ay(x) + x^2 = 0$$

✓ **Mathematica** : cpu = 1.71343 (sec), leaf count = 64

Solve $\left\{ \begin{aligned} y(x) &= \frac{a^2 + 2a\sqrt{1753755}x + \sqrt{1753755}^2x^2 + x^2}{2a}, x = \frac{c_1}{\sqrt{\sqrt{1753755}^2 + 1}} - \frac{a \sinh^{-1}(\sqrt{1753755}x + a)}{\sqrt{\sqrt{1753755}^2 + 1}} \end{aligned} \right.$

✓ **Maple** : cpu = 10.548 (sec), leaf count = 615

$$\left\{ y(x) = -\frac{(\text{RootOf}((\text{Arcsinh}(_Z))^2 a^2 - _Z^2 x^2 - 2 \text{Arcsinh}(_Z) _C1 a + _C1^2 - x^2))^4 x^2}{-2 (\text{RootOf}((\text{Arcsinh}(_Z))^2 a^2 - _Z^2 x^2 - 2 \text{Arcsinh}(_Z) _C1 a + _C1^2 - x^2))^2 a - 2 a} \right.$$

2.433 ODE No. 433

$$-4a - 4x^2 + (xy'(x) + y(x) + 2x)^2 - 4xy(x) = 0$$

✓ **Mathematica** : cpu = 0.512956 (sec), leaf count = 22

$$\left\{ \left\{ y(x) \rightarrow \frac{-a - 2c_1x + c_1^2}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.234 (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

$$x^2y'(x)^2 - x^2 - 2xy(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.033031 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow x \sinh(c_1 - \log(x)) \right\}, \left\{ y(x) \rightarrow x \sinh(c_1 + \log(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.004 (sec), leaf count = 7

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

2.435 ODE No. 435

$$x^2 y'(x)^2 - 2xy(x)y'(x) + y(x)(y(x) + 1) - x = 0$$

✓ **Mathematica** : cpu = 0.0370785 (sec), leaf count = 61

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}(c_1^2 x - 4ic_1 \sqrt{x} + 4x - 4) \right\}, \left\{ y(x) \rightarrow \frac{1}{4}(c_1^2 x + 4ic_1 \sqrt{x} + 4x - 4) \right\} \right\}$$

✓ **Maple** : cpu = 0.245 (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

$$-x^4 + x^2 y'(x)^2 + (1 - x^2) y(x)^2 - 2xy(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0345506 (sec), leaf count = 26

$$\left\{ \{y(x) \rightarrow -x \sinh(x - c_1)\}, \{y(x) \rightarrow x \sinh(c_1 + x)\} \right\}$$

✓ **Maple** : cpu = 1.761 (sec), leaf count = 59

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

2.437 ODE No. 437

$$-(a + 2xy(x))y'(x) + x^2 y'(x)^2 + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.278669 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow \frac{x - 2\sqrt{ac_1}}{4c_1^2} \right\}, \left\{ y(x) \rightarrow \frac{2\sqrt{ac_1} + x}{4c_1^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.052 (sec), leaf count = 36

$$\left\{ y(x) = -\frac{a}{4x}, y(x) = -C1 x - \sqrt{-C1 a}, y(x) = -C1 x + \sqrt{-C1 a} \right\}$$

2.438 ODE No. 438

$$x^2 y'(x)^2 + 3xy(x)y'(x) + 2y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.00711452 (sec), leaf count = 21

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{x^2} \right\}, \left\{ y(x) \rightarrow \frac{c_1}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.011 (sec), leaf count = 17

$$\left\{ y(x) = \frac{C1}{x^2}, y(x) = \frac{C1}{x} \right\}$$

2.439 ODE No. 439

$$x^2 y'(x)^2 + 3xy(x)y'(x) + 3y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0144534 (sec), leaf count = 49

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{\frac{1}{2}(-3-i\sqrt{3})} \right\}, \left\{ y(x) \rightarrow c_1 x^{\frac{1}{2}i(\sqrt{3}+3i)} \right\} \right\}$$

✓ **Maple** : cpu = 0.056 (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

$$x^2 y'(x)^2 + 4xy(x)y'(x) - 5y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.00697021 (sec), leaf count = 19

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{x^5} \right\}, \left\{ y(x) \rightarrow c_1 x \right\} \right\}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 15

$$\left\{ y(x) = \frac{C1}{x^5}, y(x) = _C1 x \right\}$$

2.441 ODE No. 441

$$x^2 y'(x)^2 - 4x(y(x) + 2)y'(x) + 4y(x)(y(x) + 2) = 0$$

✓ **Mathematica** : cpu = 0.0704787 (sec), leaf count = 65

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

✓ **Maple** : cpu = 1.138 (sec), leaf count = 121

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

2.442 ODE No. 442

$$x^2 y'(x)^2 + (1 - x)(y(x)^2 - x^2 y(x)) + (x^3 + x^2 y(x) - 2xy(x)) y'(x) = 0$$

✓ **Mathematica** : cpu = 0.00879572 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-x} x \right\}, \left\{ y(x) \rightarrow c_1 x - x^2 \right\} \right\}$$

✓ **Maple** : cpu = 0.015 (sec), leaf count = 21

$$\{ y(x) = (-x + _C1) x, y(x) = _C1 e^{-x} x \}$$

2.443 ODE No. 443

$$x(xy'(x) - y(x))^2 - y'(x) = 0$$

✓ **Mathematica** : cpu = 0.548927 (sec), leaf count = 1921

$$\left\{ \left\{ y(x) \rightarrow \text{Root} \left[1024x^{12} - 576e^{12c_1} \#1^4 x^8 - 2176e^{12c_1} \#1^3 x^6 + 81e^{24c_1} \#1^8 x^4 - 1536e^{12c_1} \#1^2 x^4 + 36e^{24c_1} \#1^2 x^4 - 192 \right] \right\} \right\}$$

✓ **Maple** : cpu = 1.69 (sec), leaf count = 221

$$\left\{ y(x) = -\frac{2}{9x^2}, y(x) = \frac{(\text{RootOf}(-729_C1 x^{12} + _Z^8 - 12_Z^7 + 60_Z^6 - 160_Z^5 + 240_Z^4 - 192_Z^3))}{9x^2} \right\}$$

2.444 ODE No. 444

$$x^2 y'(x)^2 - (y(x) - 2x)y(x)y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.145979 (sec), leaf count = 75

$$\left\{ \left\{ y(x) \rightarrow -\frac{\cosh(2c_1) - \sinh(2c_1)}{x \sinh(2c_1) + x \cosh(2c_1) - 1} \right\}, \left\{ y(x) \rightarrow -\frac{\cosh(2c_1) - \sinh(2c_1)}{x \sinh(2c_1) + x \cosh(2c_1) + 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.833 (sec), leaf count = 121

$$\left\{ y(x) = 4x, y(x) = -\frac{C1^2(\sqrt{2}C1 - 2x)}{2C1^2 - 4x^2}, y(x) = -2\frac{C1^2(\sqrt{2}C1 - x)}{2C1^2 - x^2}, y(x) = 2\frac{C1^2(\sqrt{2}C1 + x)}{2C1^2 - x^2} \right\}$$

2.445 ODE No. 445

$$y'(x)(ax^2y(x)^3 + b) + aby(x)^3 + x^2y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.00957136 (sec), leaf count = 49

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{\sqrt{2ax - 2c_1}} \right\}, \left\{ y(x) \rightarrow \frac{1}{\sqrt{2ax - 2c_1}} \right\}, \left\{ y(x) \rightarrow \frac{b}{x} + c_1 \right\} \right\}$$

✓ **Maple** : cpu = 0.017 (sec), leaf count = 35

$$\left\{ y(x) = \frac{1}{\sqrt{2ax + C1}}, y(x) = -\frac{1}{\sqrt{2ax + C1}}, y(x) = \frac{b}{x} + C1 \right\}$$

2.446 ODE No. 446

$$(x^2 + 1)y'(x)^2 - 2xy(x)y'(x) + y(x)^2 - 1 = 0$$

✓ **Mathematica** : cpu = 0.48812 (sec), leaf count = 201

$$\left\{ \left\{ y(x) \rightarrow \frac{e^{2c_1}x - 2e^{c_1} - x}{e^{2c_1} + 1} \right\}, \left\{ y(x) \rightarrow \frac{e^{2c_1}x + 2e^{c_1} - x}{e^{2c_1} + 1} \right\}, \left\{ y(x) \rightarrow \frac{-e^{4c_1}x - 2\sqrt{-e^{2c_1} + 2e^{4c_1} - e^{6c_1}}}{2e^{2c_1} - e^{4c_1} - 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.058 (sec), leaf count = 57

$$\left\{ y(x) = \sqrt{x^2 + 1}, y(x) = -\sqrt{x^2 + 1}, y(x) = C1x - \sqrt{-C1^2 + 1}, y(x) = C1x + \sqrt{-C1^2 + 1} \right\}$$

2.447 ODE No. 447

$$(x^2 - 1) y'(x)^2 - 1 = 0$$

✓ **Mathematica** : cpu = 0.0164065 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow c_1 - \log(\sqrt{x^2 - 1} + x) \right\}, \left\{ y(x) \rightarrow c_1 + \log(\sqrt{x^2 - 1} + x) \right\} \right\}$$

✓ **Maple** : cpu = 0.029 (sec), leaf count = 33

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

2.448 ODE No. 448

$$(x^2 - 1) y'(x)^2 - y(x)^2 + 1 = 0$$

✓ **Mathematica** : cpu = 0.0870283 (sec), leaf count = 109

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

✓ **Maple** : cpu = 3.785 (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

$$(x^2 - a^2) y'(x)^2 + 2xy(x)y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0103224 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{a - x} \right\}, \left\{ y(x) \rightarrow \frac{c_1}{a + x} \right\} \right\}$$

✓ **Maple** : cpu = 0.014 (sec), leaf count = 23

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

2.450 ODE No. 450

$$(x^2 - a^2) y'(x)^2 - x^2 - 2xy(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.441178 (sec), leaf count = 26

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

✓ **Maple** : cpu = 0.456 (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

$$(a + x^2) y'(x)^2 + b - 2xy(x)y'(x) + y(x)^2 = 0$$

✗ **Mathematica** : cpu = 301.004 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.061 (sec), leaf count = 78

$$\left\{ y(x) = \frac{1}{a} \sqrt{-ab(x^2 + a)}, y(x) = -\frac{1}{a} \sqrt{-ab(x^2 + a)}, y(x) =_C1 x - \sqrt{-a_C1^2 - b}, y(x) =_C1 x + \sqrt{-a_C1^2 - b} \right\}$$

2.452 ODE No. 452

$$(2x^2 + 1) y'(x)^2 + (x^2 + 2xy(x) + y(x)^2 + 2) y'(x) + 2y(x)^2 + 1 = 0$$

✗ **Mathematica** : cpu = 300.646 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 1.718 (sec), leaf count = 37

$$\left\{ y(x) = -3x - 2\sqrt{2x^2 + 1}, y(x) = -3x + 2\sqrt{2x^2 + 1} \right\}$$

2.453 ODE No. 453

$$(a^2 - 1)x^2y'(x)^2 + a^2x^2 + 2xy(x)y'(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.585785 (sec), leaf count = 395

$$\left\{ \text{Solve} \left[\frac{a \left(-\log \left(\frac{(a^2-1) \left(a \sqrt{a^2 - \frac{y(x)^2}{x^2}} - 1 + a^2 - \frac{iy(x)}{x} - 1 \right)}{a^3 \left(\frac{y(x)}{x} - i \right)} \right) + \log \left(-\frac{(a^2-1) \left(a \sqrt{a^2 - \frac{y(x)^2}{x^2}} - 1 + a^2 + \frac{iy(x)}{x} - 1 \right)}{a^3 \left(\frac{y(x)}{x} + i \right)} \right) + \log \left(\frac{y(x)}{x} \right)}{2(a^2 - 1)} \right] \right.$$

✓ **Maple** : cpu = 0.736 (sec), leaf count = 229

$$\left\{ \ln(x) - \frac{1}{a} \sqrt{-a^2} \arctan \left(\frac{a^2 y(x)}{x} \frac{1}{\sqrt{-a^2}} \frac{1}{\sqrt{-\frac{a^2 x^2 - x^2 - (y(x))^2}{x^2}}} \right) + \frac{1}{2} \ln \left(\frac{(y(x))^2 + x^2}{x^2} \right) + \frac{1}{a} \ln \left(\frac{1}{x} \left(\sqrt{-a^2} \right) \right) \right.$$

2.454 ODE No. 454

$$ax^2y'(x)^2 - (a - 1)ax^2 - 2axy(x)y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.153416 (sec), leaf count = 118

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} e^{-c_1} x^{1 - \frac{\sqrt{a-1}}{\sqrt{a}}} \left(e^{2c_1} - ax \frac{2\sqrt{a-1}}{\sqrt{a}} \right) \right\}, \left\{ y(x) \rightarrow \frac{1}{2} e^{-c_1} x^{1 - \frac{\sqrt{a-1}}{\sqrt{a}}} \left(e^{2c_1} x \frac{2\sqrt{a-1}}{\sqrt{a}} - a \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.129 (sec), leaf count = 138

$$\left\{ y(x) = \sqrt{-ax}, y(x) = \text{RootOf} \left(-\ln(x) - \int^{-Z} \frac{1}{-a^2 a - _a^2 + a^2 - a} \sqrt{(-a^2 a - _a^2 + a^2 - a) ad_a +} \right) \right.$$

2.455 ODE No. 455

$$a + x^3 y'(x)^2 + x^2 y(x) y'(x) = 0$$

✓ **Mathematica** : cpu = 0.39302 (sec), leaf count = 123

$$\left\{ \left\{ y(x) \rightarrow -\frac{e^{-\frac{c_1}{2}}(2ae^{c_1} + x)}{\sqrt{2}x} \right\}, \left\{ y(x) \rightarrow \frac{e^{-\frac{c_1}{2}}(2ae^{c_1} + x)}{\sqrt{2}x} \right\}, \left\{ y(x) \rightarrow -\frac{e^{-\frac{c_1}{2}}(2ax + e^{c_1})}{\sqrt{2}x} \right\}, \left\{ y(x) \rightarrow \frac{e^{-\frac{c_1}{2}}(2ax + e^{c_1})}{\sqrt{2}x} \right\} \right\}$$

✓ **Maple** : cpu = 0.188 (sec), leaf count = 66

$$\left\{ y(x) = -2 \frac{\sqrt{ax}}{x}, y(x) = 2 \frac{\sqrt{ax}}{x}, y(x) = \frac{-C1^2 + 4ax}{2_C1 x}, y(x) = \frac{x_C1^2 + 4a}{2_C1 x} \right\}$$

2.456 ODE No. 456

$$2(1 - x^2) y(x)y'(x) + x(x^2 - 1) y'(x)^2 + xy(x)^2 - x = 0$$

✓ **Mathematica** : cpu = 0.122226 (sec), leaf count = 79

$$\left\{ \left\{ y(x) \rightarrow x + 2x \sinh^2 \left(\frac{1}{2} \left(c_1 - 2i \tan^{-1} \left(\frac{\sqrt{x-1}}{\sqrt{x+1}} \right) \right) \right) \right\}, \left\{ y(x) \rightarrow x + 2x \sinh^2 \left(\frac{1}{2} \left(c_1 + 2i \tan^{-1} \left(\frac{\sqrt{x-1}}{\sqrt{x+1}} \right) \right) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.406 (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

$$x^4 y'(x)^2 - xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.961774 (sec), leaf count = 410

$$\left\{ \text{Solve} \left[\frac{x\sqrt{4x^2y(x)+1} \left(\log(x) - \log \left(\sqrt{4x^2y(x)+1} + 1 \right) \right)}{\sqrt{4x^4y(x)+x^2}} + \frac{x\sqrt{4x^2y(x)+1} \log(y(x)) - x\sqrt{4x^2y(x)}}{\sqrt{4x^4y(x)+x^2}} \right] \right\}$$

✓ **Maple** : cpu = 0.74 (sec), leaf count = 135

$$\left\{ y(x) = -\frac{1}{4x^2}, y(x) = \frac{-_C1(-_C1 - 2ix) -_C1^2 - 2x^2}{2_C1^2 x^2}, y(x) = \frac{-_C1(-_C1 + 2ix) -_C1^2 - 2x^2}{2_C1^2 x^2} \right\}$$

2.458 ODE No. 458

$$x^2(x^2 - a^2)y'(x)^2 - 1 = 0$$

✓ **Mathematica** : cpu = 0.0597772 (sec), leaf count = 139

$$\left\{ \left\{ y(x) \rightarrow c_1 - \frac{ix\sqrt{x^2 - a^2} \log\left(\frac{2(\sqrt{x^2 - a^2} - ia)}{x}\right)}{a\sqrt{x^4 - a^2x^2}} \right\}, \left\{ y(x) \rightarrow c_1 + \frac{ix\sqrt{x^2 - a^2} \log\left(\frac{2(\sqrt{x^2 - a^2} - ia)}{x}\right)}{a\sqrt{x^4 - a^2x^2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 90

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

2.459 ODE No. 459

$$-(y'(x) - 1)^2 + e^{-2x}y'(x)^2 + e^{-2y(x)} = 0$$

✓ **Mathematica** : cpu = 2.69934 (sec), leaf count = 272

$$\left\{ \left\{ y(x) \rightarrow \log\left(-\frac{ie^{-c_1}(e^x + 1)(e^{2c_1+x} - e^{2c_1} + e^x + 1)}{\sqrt{8e^x + 4e^{2x} + 4}}\right) \right\}, \left\{ y(x) \rightarrow \log\left(\frac{ie^{-c_1}(e^x + 1)(e^{2c_1+x} - e^{2c_1} + e^x + 1)}{\sqrt{8e^x + 4e^{2x} + 4}}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.635 (sec), leaf count = 65

$$\left\{ y(x) = x + \ln\left(\frac{1}{e^x}\left(-1 - \sqrt{(e^x)^2 - \frac{(e^x)^2}{(e^{-C1})^2}}\right)\right) + _C1, y(x) = x + \ln\left(\frac{1}{e^x}\left(-1 + \sqrt{(e^x)^2 - \frac{(e^x)^2}{(e^{-C1})^2}}\right)\right) + _C1 \right\}$$

2.460 ODE No. 460

$$\cos^4(x)(y'(x)^2 + y(x)^2) - a^2 = 0$$

✗ **Mathematica** : cpu = 55.572 (sec), leaf count = 0 , could not solve

`DSolve[-a^2 + Cos[x]^4*(y[x]^2 + Derivative[1][y][x]^2) == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve((diff(y(x),x)^2+y(x)^2)*cos(x)^4-a^2 = 0,y(x))`

2.461 ODE No. 461

$$a(x)y'(x)^2 + 2b(x)y(x)y'(x) + c(x)y(x)^2 + 2d(x)y'(x) + 2e(x)y(x) + f(x) = 0$$

✗ **Mathematica** : cpu = 300.037 (sec), leaf count = 0 , timed out

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✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(d0(x)*diff(y(x),x)^2+2*b0(x)*y(x)*diff(y(x),x)+c0(x)*y(x)^2+2*d0(x)*diff(y(x),x),x)

2.462 ODE No. 462

$$y(x)y'(x)^2 - 1 = 0$$

✓ **Mathematica** : cpu = 0.0155186 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow \left(\frac{3}{2} \right)^{2/3} (c_1 - x)^{2/3} \right\}, \left\{ y(x) \rightarrow \left(\frac{3}{2} \right)^{2/3} (c_1 + x)^{2/3} \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (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

$$y(x)y'(x)^2 - e^{2x} = 0$$

✓ **Mathematica** : cpu = 0.0173377 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow \left(\frac{3}{2} \right)^{2/3} (c_1 - e^x)^{2/3} \right\}, \left\{ y(x) \rightarrow \left(\frac{3}{2} \right)^{2/3} (c_1 + e^x)^{2/3} \right\} \right\}$$

✓ **Maple** : cpu = 0.082 (sec), leaf count = 50

$$\left\{ -1\sqrt{y(x)(e^x)^2} \frac{1}{\sqrt{y(x)}} + \frac{2}{3}(y(x))^{\frac{3}{2}} + _C1 = 0, 1\sqrt{y(x)(e^x)^2} \frac{1}{\sqrt{y(x)}} + \frac{2}{3}(y(x))^{\frac{3}{2}} + _C1 = 0 \right\}$$

2.464 ODE No. 464

$$y(x)y'(x)^2 + 2xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0607374 (sec), leaf count = 52

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

✓ **Maple** : cpu = 0.445 (sec), leaf count = 71

$$\left\{ y(x) = \sqrt{-C1^2 - 2_C1 x}, y(x) = \sqrt{-C1^2 + 2_C1 x}, y(x) = -ix, y(x) = ix, y(x) = -\sqrt{-C1^2 - 2_C1 x} \right\}$$

2.465 ODE No. 465

$$y(x)y'(x)^2 + 2xy'(x) - 9y(x) = 0$$

✗ **Mathematica** : cpu = 300.678 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.073 (sec), leaf count = 209

$$\left\{ -C1 x \left(x + \sqrt{x^2 + 9 (y(x))^2} \right) \left(\frac{1}{y(x)} \left(-x - \sqrt{x^2 + 9 (y(x))^2} \right) \right)^{\frac{2}{7}} \left(x \sqrt{x^2 + 9 (y(x))^2} + x^2 + (y(x))^2 \right) \right\}$$

2.466 ODE No. 466

$$y(x)y'(x)^2 - 2xy'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.251265 (sec), leaf count = 145

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{-2x \sinh(c_1) - 2x \cosh(c_1) - \sinh(2c_1) - \cosh(2c_1)} \right\}, \left\{ y(x) \rightarrow \sqrt{-2x \sinh(c_1) - 2x \cosh(c_1) - \sinh(2c_1) - \cosh(2c_1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.378 (sec), leaf count = 71

$$\left\{ y(x) = x, y(x) = \sqrt{-C1^2 - 2ix_C1}, y(x) = \sqrt{-C1^2 + 2ix_C1}, y(x) = -x, y(x) = -\sqrt{-C1^2 - 2ix_C1} \right\}$$

2.467 ODE No. 467

$$y(x)y'(x)^2 - 4xy'(x) + y(x) = 0$$

✗ **Mathematica** : cpu = 300.219 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.07 (sec), leaf count = 148

$$\left\{ \frac{-C1 x}{y(x)} \frac{1}{\sqrt[3]{\frac{1}{(y(x))^2} \left(8x^2 - 4(y(x))^2 - 4x\sqrt{4x^2 - (y(x))^2} \right)}} \frac{1}{\sqrt[3]{\frac{1}{y(x)} \left(2x - \sqrt{4x^2 - (y(x))^2} \right)}} + x = 0, \right.$$

2.468 ODE No. 468

$$-4a^2xy'(x) + a^2y(x) + y(x)y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 300.48 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.083 (sec), leaf count = 181

$$\left\{ \frac{-C1 x}{ay(x)} \frac{1}{\sqrt[3]{\frac{a}{y(x)} \left(2ax + \sqrt{4a^2x^2 - (y(x))^2} \right)}} \frac{1}{\sqrt[3]{\frac{a^2}{(y(x))^2} \left(2a^2x^2 + \sqrt{4a^2x^2 - (y(x))^2}ax - (y(x))^2 \right)}} + x = 0, \right.$$

2.469 ODE No. 469

$$axy'(x) + by(x) + y(x)y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.327907 (sec), leaf count = 247

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

✓ **Maple** : cpu = 0.099 (sec), leaf count = 242

$$\left\{ \frac{-C1 x}{(y(x))^2} \left(\frac{1}{2 y(x)} \left(-ax + \sqrt{a^2 x^2 - 4 b (y(x))^2} \right) \right)^{-\frac{a}{a+b}} \left(-ax + \sqrt{a^2 x^2 - 4 b (y(x))^2} \right) \left(-\frac{a}{2 (y(x))^2} \left(-\right. \right. \right.$$

2.470 ODE No. 470

$$x^3 y'(x) - x^2 y(x) + y(x) y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.296 (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

$$y(x) y'(x)^2 - (y(x) - x) y'(x) - x = 0$$

✓ **Mathematica** : cpu = 0.00818743 (sec), leaf count = 47

$$\left\{ \{y(x) \rightarrow c_1 + x\}, \{y(x) \rightarrow -\sqrt{2c_1 - x^2}\}, \{y(x) \rightarrow \sqrt{2c_1 - x^2}\} \right\}$$

✓ **Maple** : cpu = 0.017 (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

$$(y(x) + x) y'(x)^2 + 2x y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.185848 (sec), leaf count = 127

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{3} \left(-2\sqrt{e^{2c_1} - 3e^{c_1} x} - e^{c_1} \right) \right\}, \left\{ y(x) \rightarrow \frac{1}{3} \left(2\sqrt{e^{2c_1} - 3e^{c_1} x} - e^{c_1} \right) \right\}, \left\{ y(x) \rightarrow e^{c_1} - 2\sqrt{e^{c_1} x} + \right. \right.$$

✓ **Maple** : cpu = 0.464 (sec), leaf count = 119

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

2.473 ODE No. 473

$$(y(x) - 2x)y'(x)^2 - 2(x - 1)y'(x) + y(x) - 2 = 0$$

✓ **Mathematica** : cpu = 0.377952 (sec), leaf count = 165

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

✓ **Maple** : cpu = 0.591 (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

$$2y(x)y'(x)^2 - (4x - 5)y'(x) + 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.225687 (sec), leaf count = 135

$$\left\{ \left\{ y(x) \rightarrow -i\sqrt{2}e^{\frac{c_1}{2}}\sqrt{8e^{c_1} + 4x - 5} \right\}, \left\{ y(x) \rightarrow i\sqrt{2}e^{\frac{c_1}{2}}\sqrt{8e^{c_1} + 4x - 5} \right\}, \left\{ y(x) \rightarrow -\frac{1}{4}ie^{\frac{c_1}{2}}\sqrt{e^{c_1} + 8x - 1} \right\} \right\}$$

✓ **Maple** : cpu = 1.031 (sec), leaf count = 154

$$\left\{ \ln\left(x - \frac{5}{4}\right) + \frac{1}{2}\ln\left(16\frac{(y(x))^2}{(4x - 5)^2} - 1\right) - \frac{\sqrt{4}}{2}\sqrt{\frac{-16(y(x))^2 + 16x^2 - 40x + 25}{(4x - 5)^2}} + \sqrt{-16\frac{(y(x))^2}{(4x - 5)^2}} \right\}$$

2.475 ODE No. 475

$$4y(x)y'(x)^2 + 2xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0679432 (sec), leaf count = 57

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{2}e^{2c_1}\sqrt{e^{4c_1} - 2x} \right\}, \left\{ y(x) \rightarrow \frac{1}{2}e^{2c_1}\sqrt{e^{4c_1} - 2x} \right\} \right\}$$

✓ **Maple** : cpu = 0.452 (sec), leaf count = 69

$$\left\{ y(x) = \sqrt{-C1^2 - C1x}, y(x) = \sqrt{-C1^2 + C1x}, y(x) = -\frac{i}{2}x, y(x) = \frac{i}{2}x, y(x) = -\sqrt{-C1^2 - C1x} \right\}$$

2.476 ODE No. 476

$$4x^3y'(x) - 4x^2y(x) + 9y(x)y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.296 (sec), leaf count = 87

$$\left\{ y(x) = -\frac{i}{3}x^2, y(x) = \frac{i}{3}x^2, y(x) = -\frac{1}{6}\sqrt{-4x^2 - C1 + C1^2}, y(x) = \frac{1}{6}\sqrt{-4x^2 - C1 + C1^2}, y(x) = -2 \right\}$$

2.477 ODE No. 477

$$ay(x)y'(x)^2 + (2x - b)y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.306258 (sec), leaf count = 146

$$\left\{ \left\{ y(x) \rightarrow -\frac{e^{\frac{c_1}{2}}\sqrt{2b + e^{c_1} - 4x}}{2\sqrt{a}} \right\}, \left\{ y(x) \rightarrow \frac{e^{\frac{c_1}{2}}\sqrt{2b + e^{c_1} - 4x}}{2\sqrt{a}} \right\}, \left\{ y(x) \rightarrow -\sqrt{2}e^{\frac{c_1}{2}}\sqrt{2ae^{c_1} - b + 2x} \right\}, \right\}$$

✓ **Maple** : cpu = 0.513 (sec), leaf count = 929

$$\left\{ \int_{-b}^x 2 \frac{-2_a + b + \sqrt{4a(y(x))^2 + 4_a^2 - 4_a b + b^2}}{4a(y(x))^2 + \sqrt{4a(y(x))^2 + 4_a^2 - 4_a b + b^2}b - 2\sqrt{4a(y(x))^2 + 4_a^2 - 4_a b + b^2}_a + b^2} \right\}$$

2.478 ODE No. 478

$$(y'(x)^2 + 1)(ay(x) + b) - c = 0$$

✓ **Mathematica** : cpu = 0.167435 (sec), leaf count = 141

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\frac{c \tan^{-1} \left(\frac{\sqrt{\#1a+b}}{\sqrt{-\#1a-b+c}} \right) - \sqrt{\#1a+b} \sqrt{-\#1a-b+c}}{a} \right] [c_1 - x] \right\}, \left\{ y(x) \rightarrow \right.$$

✓ **Maple** : cpu = 0.085 (sec), leaf count = 88

$$\left\{ x - \int^{y(x)} \frac{1}{\sqrt{-(aa+b)(aa+b-c)}} da - C1 = 0, x - \int^{y(x)} \frac{-(aa+b)}{\sqrt{-(aa+b)(aa+b-c)}} da - C1 = 0 \right.$$

2.479 ODE No. 479

$$a_0x + y'(x)(a_1x + b_1y(x) + c_1) + y'(x)^2(a_2x + b_2y(x) + c_2) + b_0y(x) + c_0 = 0$$

✗ **Mathematica** : cpu = 300.03 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.307 (sec), leaf count = 929

$$\left\{ x - e^{\int \frac{1}{2b_2y(x)+2a_2x+2c_2} (-a_1x - b_1y(x) - c_1 + \sqrt{-4a_0a_2x^2 - 4a_0b_2xy(x) + a_1^2x^2 + 2a_1b_1xy(x) - 4a_2b_0xy(x) - 4b_0b_2(y(x))^2 + b_1^2(y(x))^2 - 4a_0c_2x - 4c_1c_2})} dx - C1 = 0 \right.$$

2.480 ODE No. 480

$$(ay(x) - x^2) y'(x)^2 + 2xy(x)y'(x)^2 - y(x)^2 = 0$$

✗ **Mathematica** : cpu = 30.4013 (sec), leaf count = 0 , could not solve

DSolve[-y[x]^2 + 2*x*y[x]*Derivative[1][y][x]^2 + (-x^2 + a*y[x])*Derivative[1][y][x]^2 = 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve((a*y(x)-x^2)*diff(y(x),x)^2+2*x*y(x)*diff(y(x),x)^2-y(x)^2 = 0,y(x))

2.481 ODE No. 481

$$(x^2 + y(x)^2) y'(x) + xy(x)y'(x)^2 + xy(x) = 0$$

✓ **Mathematica** : cpu = 0.00935057 (sec), leaf count = 49

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{x} \right\}, \left\{ y(x) \rightarrow -\sqrt{2c_1 - x^2} \right\}, \left\{ y(x) \rightarrow \sqrt{2c_1 - x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.02 (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

$$(a + x^{22} - y(x)^2) y'(x) + xy(x)y'(x)^2 - xy(x) = 0$$

✗ **Mathematica** : cpu = 63.2886 (sec), leaf count = 0 , could not solve

`DSolve[-(x*y[x]) + (a + x^22 - y[x]^2)*Derivative[1][y][x] + x*y[x]*Derivative[1][y][x]^2 - x*y[x], y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(x*y(x)*diff(y(x),x)^2+(x^22-y(x)^2+a)*diff(y(x),x)-x*y(x) = 0,y(x))`

2.483 ODE No. 483

$$(2xy(x) - x^2) y'(x)^2 + 2xy(x)y'(x) - y(x)^2 + 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.161439 (sec), leaf count = 71

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

✓ **Maple** : cpu = 0.088 (sec), leaf count = 109

$$\left\{ y(x) = 0, y(x) = \text{RootOf} \left(-2 \ln(x) + \int^{-Z} \frac{1}{-a (-a^2 + 1)} \left(-2 _a^2 + \sqrt{2 _a^3 - 4 _a^2 + 2 _a} \right) d_a + 2 \right) \right\}$$

2.484 ODE No. 484

$$(2xy(x) - x^2) y'(x)^2 - 6xy(x)y'(x) - y(x)^2 + 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.151249 (sec), leaf count = 81

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{3x^2 - 2e^{\frac{c_1}{2}}x - e^{\frac{c_1}{2}} + 2x} \right\}, \left\{ y(x) \rightarrow \sqrt{3x^2 - 2e^{\frac{c_1}{2}}x - e^{\frac{c_1}{2}} + 2x} \right\} \right\}$$

✓ **Maple** : cpu = 0.086 (sec), leaf count = 121

$$\left\{ y(x) = 0, y(x) = \text{RootOf} \left(-2 \ln(x) + \int^{-Z} \frac{1}{-a(-a^2 - 4_a + 1)} \left(-2_a^2 + \sqrt{2_a^3 + 4_a^2 + 2_a} + \right) \right) \right\}$$

2.485 ODE No. 485

$$-y'(x) (ay(x)^2 + bx^2 + c) + axy(x)y'(x)^2 + bxy(x) = 0$$

✗ **Mathematica** : cpu = 300. (sec), leaf count = 0 , timed out

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✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.486 ODE No. 486

$$-a^2 + y(x)^2 y'(x)^2 + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0251952 (sec), leaf count = 117

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{a^2 - 2c_1x - c_1^2 - x^2} \right\}, \left\{ y(x) \rightarrow \sqrt{a^2 - 2c_1x - c_1^2 - x^2} \right\}, \left\{ y(x) \rightarrow -\sqrt{a^2 + 2c_1x - c_1^2 - x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.102 (sec), leaf count = 59

$$\left\{ y(x) = a, y(x) = \sqrt{-C1^2 + 2_C1x + a^2 - x^2}, y(x) = -a, y(x) = -\sqrt{-C1^2 + 2_C1x + a^2 - x^2} \right\}$$

2.487 ODE No. 487

$$-6x^3y'(x) + 4x^2y(x) + y(x)^2y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.433 (sec), leaf count = 114

$$\left\{ y(x) = \left(-\frac{\sqrt[3]{18}}{4}\sqrt[3]{x} - \frac{i}{4}\sqrt{3}\sqrt[3]{18}\sqrt[3]{x} \right) x, y(x) = \left(-\frac{\sqrt[3]{18}}{4}\sqrt[3]{x} + \frac{i}{4}\sqrt{3}\sqrt[3]{18}\sqrt[3]{x} \right) x, y(x) = \text{RootOf} \left(-\ln(x) \right) \right.$$

2.488 ODE No. 488

$$4a^2 - 4ay(x)y'(x) - 4ax + y(x)^2y'(x)^2 + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.35641 (sec), leaf count = 85

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{16a^3x - 4a^2x^2 - 4ac_1x - c_1^2}}{2a} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{16a^3x - 4a^2x^2 - 4ac_1x - c_1^2}}{2a} \right\} \right\}$$

✓ **Maple** : cpu = 0.438 (sec), leaf count = 113

$$\left\{ y(x) = -2\sqrt{ax}, y(x) = 2\sqrt{ax}, y(x) = -\frac{1}{4a}\sqrt{-16a^4 + 32a^3x - 16a^2x^2 + 8_C1a^2 + 8_C1ax - _C} \right.$$

2.489 ODE No. 489

$$ay(x)^2 + bx + c + y(x)^2y'(x)^2 + 2xy(x)y'(x) = 0$$

✗ **Mathematica** : cpu = 303.089 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 2.316 (sec), leaf count = 5525

2.490 ODE No. 490

$$a - x^2 - 2xy(x)y'(x) + y(x)^2y'(x)^2 + 2y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.587271 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{-a + 8c_1x - 4c_1^2 - 2x^2}}{\sqrt{2}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{-a + 8c_1x - 4c_1^2 - 2x^2}}{\sqrt{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.428 (sec), leaf count = 145

$$\left\{ y(x) = \sqrt{-2\sqrt{a + 2_C1x - _C1} - x^2 - a}, y(x) = \sqrt{2\sqrt{a + 2_C1x - _C1} - x^2 - a}, y(x) = -\sqrt{-2\sqrt{a + 2_C1x - _C1} - x^2 - a} \right\}$$

2.491 ODE No. 491

$$(a - 1)b + ax^2 + 2axy(x)y'(x) + (1 - a)y(x)^2 + y(x)^2y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 1.01011 (sec), leaf count = 79

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{-2ac_1x + ac_1^2 + b + 2c_1x - c_1^2 - x^2} \right\}, \left\{ y(x) \rightarrow \sqrt{-2ac_1x + ac_1^2 + b + 2c_1x - c_1^2 - x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.724 (sec), leaf count = 251

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

2.492 ODE No. 492

$$(y(x)^2 - a^2)y'(x)^2 + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.271138 (sec), leaf count = 111

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

✓ **Maple** : cpu = 0.395 (sec), leaf count = 122

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

2.493 ODE No. 493

$$(a^2 - 2ax + y(x)^2) y'(x)^2 + 2ay(x)y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 8.45034 (sec), leaf count = 553

$$\left\{ \text{Solve} \left[\left\{ y(x) = \frac{-\sqrt{-a^2 (a^2 - 2Kx - 2x) - a^2} - a}{a^2 + 1}, x = \frac{ac_1^2 K}{a^2 + 1} \right. \right. \right.$$

✓ **Maple** : cpu = 1.115 (sec), leaf count = 124

$$\left\{ [x(-T) = \frac{1}{2a} \left(\left(\text{Artanh} \left(\frac{1}{\sqrt{-T^2 + 1}} \right) \right)^2 \sqrt{-T^2 + 1} a^2 - 2 \text{Artanh} \left(\frac{1}{\sqrt{-T^2 + 1}} \right) \sqrt{-T^2 + 1} - C1 a \right. \right.$$

2.494 ODE No. 494

$$(y(x)^2 - a^2 x^2) y'(x)^2 + (1 - a^2) x^2 + 2xy(x)y'(x) = 0$$

✗ **Mathematica** : cpu = 301.63 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.174 (sec), leaf count = 173

$$\left\{ y(x) = \sqrt{a^2 - 1}x, y(x) = \text{RootOf} \left(-\ln(x) + \int \frac{1}{-a^4 - a^2 a^2 + 2 - a^2 - a^2 + 1} (-a^3 + -a a^2 + \sqrt{\dots}) \right. \right.$$

2.495 ODE No. 495

$$((1 - a)x^2 + y(x)^2) y'(x)^2 + 2axy(x)y'(x) + (1 - a)y(x)^2 + x^2 = 0$$

✓ **Mathematica** : cpu = 0.109393 (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 = 0.418 (sec), leaf count = 61

$$\left\{ y(x) = \tan \left(\text{RootOf} \left(-2 - Z \sqrt{a - 1} - \ln \left(\frac{x^2}{(\cos(-Z))^2} \right) + 2 - C1 \right) \right) x, y(x) = \tan \left(\text{RootOf} \left(2 - Z \sqrt{a - 1} - \ln \left(\frac{x^2}{(\cos(-Z))^2} \right) + 2 - C1 \right) \right) x \right.$$

2.496 ODE No. 496

$$(y(x) - x)^2 (y'(x)^2 + 1) - a^2 (y'(x) + 1)^2 = 0$$

✓ **Mathematica** : cpu = 95.0976 (sec), leaf count = 65

$$\left\{ \left\{ y(x) \rightarrow c_1 - \sqrt{a^2 + 2c_1x - c_1^2 - x^2} \right\}, \left\{ y(x) \rightarrow \sqrt{a^2 + 2c_1x - c_1^2 - x^2} + c_1 \right\} \right\}$$

✓ **Maple** : cpu = 0.23 (sec), leaf count = 130

$$\left\{ y(x) = x - \sqrt{2}a, y(x) = x + \sqrt{2}a, y(x) = x + \text{RootOf} \left(-x + \int^{-z} -\frac{1}{2\sqrt{-a^2 - 4a^2}} \left(-a^2 - 2a^2 + \sqrt{-a^2 - 4a^2} \right) dz \right) \right\}$$

2.497 ODE No. 497

$$-x^2 - 2xy(x)y'(x) + 3y(x)^2y'(x)^2 + 4y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.171934 (sec), leaf count = 203

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{-4ix \sinh(3c_1) - 4ix \cosh(3c_1) + \sinh(6c_1) + \cosh(6c_1) - 3x^2}}{\sqrt{3}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{-4ix \sinh(3c_1) - 4ix \cosh(3c_1) + \sinh(6c_1) + \cosh(6c_1) - 3x^2}}{\sqrt{3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.447 (sec), leaf count = 203

$$\left\{ \ln(x) - \frac{1}{2} \sqrt{\frac{x^2 - 3(y(x))^2}{x^2}} + \text{Artanh} \left(\frac{1}{2} \sqrt{\frac{x^2 - 3(y(x))^2}{x^2}} \right) + \frac{\sqrt{3}}{6} \sqrt{\frac{(\sqrt{3}x - 3y(x))(\sqrt{3}x + 3y(x))}{x^2}} \right\}$$

2.498 ODE No. 498

$$(3y(x) - 2)y'(x)^2 + 4y(x) - 4 = 0$$

✓ **Mathematica** : cpu = 0.100361 (sec), leaf count = 107

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\sqrt{1 - \#1} \sqrt{3\#1 - 2} - \frac{\sin^{-1}(\sqrt{3 - 3\#1})}{\sqrt{3}} \& \right] [c_1 - 2x] \right\}, \left\{ y(x) \rightarrow \text{InverseFunction} \left[\sqrt{1 - \#1} \sqrt{3\#1 - 2} - \frac{\sin^{-1}(\sqrt{3 - 3\#1})}{\sqrt{3}} \& \right] [c_1 - 2x] \right\} \right\}$$

✓ **Maple** : cpu = 0.29 (sec), leaf count = 99

$$\left\{ y(x) = 1, y(x) = \frac{\sin(\text{RootOf}(-8\sqrt{3}C1Z + 8\sqrt{3}xZ - (\cos(Z))^2 + 48C1^2 - 96C1x + 48x^2))}{6} \right.$$

2.499 ODE No. 499

$$a^2(-x^2) - 2a^2xy(x)y'(x) + (1 - a^2)y(x)^2y'(x)^2 + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.294132 (sec), leaf count = 212

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{a^6(-x^2) + 3a^4x^2 + 2a^2xe^{a^2c_1-c_1} - 2xe^{a^2c_1-c_1} + e^{2a^2c_1-2c_1} - 3a^2x^2 + x^2}}{\sqrt{a^6 - 3a^4 + 3a^2 - 1}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{a^6}}{\sqrt{a^6 - 3a^4 + 3a^2 - 1}} \right\} \right.$$

✓ **Maple** : cpu = 0.191 (sec), leaf count = 201

$$\left\{ y(x) = \text{RootOf}\left(-\ln(x) + \int^{-Z} \frac{-a}{a^2a^4 - a^4 + 2a^2a^2 - a^2 + a^2} \left(-a^2a^2 + a^2 - a^2 + \sqrt{-a^2a^2 - a^2}\right) dz\right) \right.$$

2.500 ODE No. 500

$$(a - b)y(x)^2y'(x)^2 - ab + ay(x)^2 - bx^2 - 2bxy(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 1.27283 (sec), leaf count = 100

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{-ab - 2ac_1x + ac_1^2 + ax^2 + b^2 - bx^2}}{\sqrt{b - a}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{-ab - 2ac_1x + ac_1^2 + ax^2 + b^2 - bx^2}}{\sqrt{b - a}} \right\} \right.$$

✓ **Maple** : cpu = 0.904 (sec), leaf count = 260

$$\left\{ y(x) = \frac{1}{b}\sqrt{-C1ab + C1b^2 - b^2x^2 - 2b\sqrt{-C1ab - ab^2x + ab^2}}, y(x) = \frac{1}{b}\sqrt{-C1ab + C1b^2 - b^2x^2 - 2b\sqrt{-C1ab - ab^2x + ab^2}} \right.$$

2.501 ODE No. 501

$$y'(x)^2 (ay(x)^2 + bx + c) - by(x)y'(x) + dy(x)^2 = 0$$

✓ **Mathematica** : cpu = 30.9902 (sec), leaf count = 913

$$\left\{ \text{Solve} \left[\left\{ y(x) = \frac{b\sqrt{-K\$1923602^2 (-b^2 + 4aK\$1923602^2 xb + 4dxb + 4acK\$1923602^2 + 4d^2)}}{2 (aK\$1923602^2 + d)} \right. \right. \right.$$

✓ **Maple** : cpu = 4.878 (sec), leaf count = 287

$$\left\{ [x(_T) = -\frac{1}{4bd} \left((\ln(2))^2 \sqrt{-T^2 a + db^2} + 4 \ln(2) \sqrt{d} \sqrt{-T^2 a + d} _C1 b + 2 \ln(2) \sqrt{-T^2 a + d} \ln \left(\frac{y}{\dots} \right) \right) \right.$$

2.502 ODE No. 502

$$(ay(x) - bx)^2 (a^2 y'(x)^2 + b^2) - c^2 (ay'(x) + b)^2 = 0$$

✓ **Mathematica** : cpu = 1.70746 (sec), leaf count = 100

$$\left\{ \left\{ y(x) \rightarrow \frac{bc_1}{a} - \frac{\sqrt{2b^2 c_1 x - b^2 c_1^2 + b^2 (-x^2) + c^2}}{a} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{2b^2 c_1 x - b^2 c_1^2 + b^2 (-x^2) + c^2}}{a} + \frac{bc_1}{a} \right\} \right.$$

✓ **Maple** : cpu = 0.368 (sec), leaf count = 195

$$\left\{ y(x) = \frac{bx - \sqrt{2}c}{a}, y(x) = \frac{bx + \sqrt{2}c}{a}, y(x) = \frac{1}{a} \left(\text{RootOf} \left(-x + \int^{-z} \frac{a}{(2_a^2 a^2 - 4c^2) b} (-_a^2 a^2 + 2c^2 - \dots) \right) \right) \right.$$

2.503 ODE No. 503

$$a_0 + y'(x)(a_1 x + b_1 y(x) + c_1) + y'(x)^2 (a_2 x + b_2 y(x) + c_2)^2 + b_0 y(x) + c_0 = 0$$

✗ **Mathematica** : cpu = 300.059 (sec), leaf count = 0 , timed out

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✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve((b2*y(x)+a2*x+c2)^2*diff(y(x),x)^2+(a1*x+b1*y(x)+c1)*diff(y(x),x)+b0*y(x)+a0+c0=0)

2.504 ODE No. 504

$$-(-a + x^3 + y(x)^3) y'(x) + x^2 y(x) + x y(x)^2 y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.81 (sec), leaf count = 303

$$\left\{ \int_{-b}^{y(x)} -a^2 \frac{1}{\sqrt{-a^6 + (-2x^3 - 2a)a^3 + (-x^3 + a)^2}} dx - \frac{\ln(x)}{2} - C1 = 0, \int_{-b}^{y(x)} -a^2 \frac{1}{\sqrt{-a^6 + (-2x^3 - 2a)a^3 + (-x^3 + a)^2}} dx - \frac{\ln(x)}{2} - C1 = 0 \right\}$$

2.505 ODE No. 505

$$-x^3 + x y(x)^2 y'(x)^2 - 2 y(x)^3 y'(x) + 2 x y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0126403 (sec), leaf count = 73

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{2c_1 + x^2} \right\}, \left\{ y(x) \rightarrow \sqrt{2c_1 + x^2} \right\}, \left\{ y(x) \rightarrow -\sqrt{c_1 x^4 + x^2} \right\}, \left\{ y(x) \rightarrow \sqrt{c_1 x^4 + x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 52

$$\left\{ y(x) = \sqrt{x^2 + C1}, y(x) = \sqrt{x^2 - C1 + 1x}, y(x) = -\sqrt{x^2 + C1}, y(x) = -\sqrt{x^2 - C1 + 1x} \right\}$$

2.506 ODE No. 506

$$2x^2(y(x) - x)y(x)^2 y'(x) + x^2(xy(x)^2 - 1) y'(x)^2 - (x^2 y(x) - 1) y(x)^2 = 0$$

✗ **Mathematica** : cpu = 61.7738 (sec), leaf count = 0 , could not solve

```
DSolve[-(y[x]^2*(-1 + x^2*y[x])) + 2*x^2*y[x]^2*(-x + y[x])*Derivative[1][y][x] + x^2*(x^2*y[x]^2 - 1)*Derivative[1][y][x]^2 == 0, y[x], x]
```

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

```
dsolve(x^2*(x*y(x)^2-1)*diff(y(x),x)^2+2*x^2*y(x)^2*(y(x)-x)*diff(y(x),x)-y(x)^2*(x^2*y(x)-1)=0,y(x))
```


2.507 ODE No. 507

$$(y(x)^4 - a^2x^2) y'(x)^2 + 2a^2xy(x)y'(x) + y(x)^2 (y(x)^2 - a^2) = 0$$

✓ **Mathematica** : cpu = 29.2635 (sec), leaf count = 443

$$\left\{ \text{Solve} \left[\left\{ x = \frac{a^2 K\$19743 y(K\$19743) - \sqrt{a^2 K\$19743^2 (K\$19743^2 + 1) y(K\$19743)^4}}{a^2 K\$19743^2}, y(x) = \frac{1}{4} \left(-\frac{ac_1}{\sqrt[4]{K\$19743}} \right) \right. \right. \right.$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception
time expired

2.508 ODE No. 508

$$(x^2y(x)^2 - x^2 + y(x)^4) y'(x)^2 + 2xy(x)y'(x) - y(x)^2 = 0$$

✗ **Mathematica** : cpu = 55.1081 (sec), leaf count = 0 , could not solve

`DSolve[-y[x]^2 + 2*x*y[x]*Derivative[1][y][x] + (-x^2 + x^2*y[x]^2 + y[x]^4)*Derivative`

✓ **Maple** : cpu = 1.904 (sec), leaf count = 60

$$\{y(x) = -ix, y(x) = ix, y(x) = -\text{Artanh}(\text{RootOf}((\text{Artanh}(_Z))^2 _Z^2 - 2 \text{Artanh}(_Z) _C1 _Z^2 + _C2))\}$$

2.509 ODE No. 509

$$9(x^2 - 1) y(x)^4 y'(x)^2 - 4x^2 - 6xy(x)^5 y'(x) = 0$$

✓ **Mathematica** : cpu = 19.0001 (sec), leaf count = 817

$$\left\{ \left\{ y(x) \rightarrow -\sqrt[3]{-2\sqrt[6]{x^2-1}} \sqrt{\sinh\left(\frac{1}{2}\left(6c_1 - \int \frac{(x^2-1)^{5/6}(\log(x-1) - \log(x+1))}{(x-1)^{5/6}(x+1)^{5/6}} dx + \frac{x((x-1)(x+1))}{(x-1)}\right)}\right. \right. \right.$$

✓ **Maple** : cpu = 1.405 (sec), leaf count = 245

$$\left\{ y(x) = \sqrt[6]{-4x^2+4}, y(x) = \left(-\frac{1}{2} - \frac{i}{2}\sqrt{3}\right) \sqrt[6]{-4x^2+4}, y(x) = \left(-\frac{1}{2} + \frac{i}{2}\sqrt{3}\right) \sqrt[6]{-4x^2+4}, y(x) = \left(\frac{1}{2} - \frac{i}{2}\sqrt{3}\right) \sqrt[6]{-4x^2+4} \right\}$$

2.510 ODE No. 510

$$-(x^4 y(x)^2 - 1) y(x)^2 + x^2 (x^2 y(x)^4 - 1) y'(x)^2 + 2x^3 (y(x)^2 - x^2) y(x)^3 y'(x) = 0$$

✗ **Mathematica** : cpu = 59.903 (sec), leaf count = 0 , could not solve

`DSolve[-(y[x]^2*(-1 + x^4*y[x]^2)) + 2*x^3*y[x]^3*(-x^2 + y[x]^2)*Derivative[1][y][x] + x^2*y[x]^4*Derivative[1][y][x]^2 == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(x^2*(x^2*y(x)^4-1)*diff(y(x),x)^2+2*x^3*y(x)^3*(y(x)^2-x^2)*diff(y(x),x)-y(x)^2*(x^4*y(x)^2-1)=0,y(x))`

2.511 ODE No. 511

$$(a^2 \sqrt{x^2 + y(x)^2} - x^2) y'(x)^2 + a^2 \sqrt{x^2 + y(x)^2} + 2xy(x)y'(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 1.55994 (sec), leaf count = 229

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

✓ **Maple** : cpu = 4.812 (sec), leaf count = 199

$$\left\{ \arctan \left(\frac{x}{y(x)} \right) - 2 \frac{\sqrt{a^2 ((y(x))^2 + x^2)} \left(-a^2 + \sqrt{(y(x))^2 + x^2} \right)}{a\sqrt{(y(x))^2 + x^2} \sqrt{-a^2 + \sqrt{(y(x))^2 + x^2}}} \arctan \left(\frac{\sqrt{-a^2 + \sqrt{(y(x))^2 + x^2}}}{a} \right) \right.$$

2.512 ODE No. 512

$$(a(x^2 + y(x)^2)^{3/2} - x^2) y'(x)^2 + a(x^2 + y(x)^2)^{3/2} + 2xy(x)y'(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 4.56554 (sec), leaf count = 725

$$\left\{ \text{Solve} \left[\tan^{-1} \left(\frac{x}{y(x)} \right) - \frac{i\sqrt{a}(x^2 + y(x)^2) \sqrt{\sqrt{x^2 + y(x)^2} - a(x^2 + y(x)^2)}}{\sqrt{2} \left(\log \left(\frac{a^{3/2} (3i\sqrt{2}a\sqrt{x^2 + y(x)^2} + \dots)}{\dots} \right) \right)} \right] \right.$$

✓ **Maple** : cpu = 18.492 (sec), leaf count = 135

$$\left\{ y(x) = x \left(\tan \left(\text{RootOf} \left(-_Z + \int \frac{x^2 ((\tan(_Z))^2 + 1)}{(\tan(_Z))^2} - \frac{1}{2_a^2 (_a a^2 - 1)} (\sqrt{-aa} + 1) \sqrt{-_a^{\frac{5}{2}} a} (\sqrt{-aa} - \dots) \right) \right) \right.$$

2.513 ODE No. 513

$$y'(x)^2 \sin(y(x)) + 2xy'(x) \cos^3(y(x)) - \sin(y(x)) \cos^4(y(x)) = 0$$

✗ **Mathematica** : cpu = 300.034 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 2.542 (sec), leaf count = 2402

$$\left\{ [x(_T) = -\frac{1}{8_T} \left(16_T^2 \sin \left(1/2 \arctan \left(\frac{-C1^2_T - 2_T_C1 \sqrt[3]{-C1^3_T + 54_T_C1 + 6}}{\sqrt[3]{-C1}} \right) \right) \right.$$

2.514 ODE No. 514

$$y'(x)^2(a \cos(y(x)) + b) - c \cos(y(x)) + d = 0$$

✓ **Mathematica** : cpu = 14.7912 (sec), leaf count = 605

$$\left\{ \left\{ \begin{array}{l} y(x) \rightarrow \text{InverseFunction} \left[\frac{4 \sin^2\left(\frac{\#1}{2}\right) \csc(\#1) \sqrt{a \cos(\#1) + b} \sqrt{\frac{\cot^2\left(\frac{\#1}{2}\right)(c-d)}{c+d}} \sqrt{\frac{\csc^2\left(\frac{\#1}{2}\right)(a+b)(d-c \cos(\#1))}{ad+bc}} \right]} \end{array} \right. \right.$$

✓ **Maple** : cpu = 0.235 (sec), leaf count = 87

$$\left\{ x - \int^{y(x)} (a \cos(_a) + b) \frac{1}{\sqrt{(a \cos(_a) + b)(c \cos(_a) - d)}} d_a - _C1 = 0, x - \int^{y(x)} -(a \cos(_a) + b) \frac{1}{\sqrt{(a \cos(_a) + b)(c \cos(_a) - d)}} d_a - _C1 = 0 \right.$$

2.515 ODE No. 515

$$f(x^2 + y(x)^2) (y'(x)^2 + 1) - (xy'(x) - y(x))^2 = 0$$

✗ **Mathematica** : cpu = 300. (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 2.196 (sec), leaf count = 113

$$\left\{ y(x) = x \left(\tan \left(\text{RootOf} \left(-_Z + \int \frac{x^2((\tan(_Z))^2 + 1)}{(\tan(_Z))^2} - \frac{1}{2_a (f(_a) - _a)} \sqrt{-(f(_a) - _a) f(_a) d_a} \right) \right) \right)$$

2.516 ODE No. 516

$$(x^2 + y(x)^2) f\left(\frac{x}{\sqrt{x^2 + y(x)^2}}\right) (y'(x)^2 + 1) - (xy'(x) - y(x))^2 = 0$$

✓ **Mathematica** : cpu = 2.85062 (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 = 1.09 (sec), leaf count = 70

$$\left\{ y(x) = \text{RootOf} \left(-\ln(x) + \int^{-Z} -\frac{1}{-a^2+1} \left(-a f\left(\frac{1}{\sqrt{-a^2+1}}\right) + \sqrt{-\left(f\left(\frac{1}{\sqrt{-a^2+1}}\right)\right)^2 + f\left(\frac{1}{\sqrt{-a^2+1}}\right)} \right) \right. \right.$$

2.517 ODE No. 517

$$(x^2 + y(x)^2) f\left(\frac{y(x)}{\sqrt{x^2 + y(x)^2}}\right) (y'(x)^2 + 1) - (xy'(x) - y(x))^2 = 0$$

✓ **Mathematica** : cpu = 2.98887 (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 = 1.092 (sec), leaf count = 78

$$\left\{ y(x) = \text{RootOf} \left(-\ln(x) + \int^{-Z} -\frac{1}{-a^2+1} \left(-a f\left(-a \frac{1}{\sqrt{-a^2+1}}\right) + \sqrt{-\left(f\left(-a \frac{1}{\sqrt{-a^2+1}}\right)\right)^2 + f\left(-a \frac{1}{\sqrt{-a^2+1}}\right)} \right) \right. \right.$$

2.518 ODE No. 518

$$y'(x)^3 - (y(x) - a)^2(y(x) - b)^2 = 0$$

✓ **Mathematica** : cpu = 0.770066 (sec), leaf count = 236

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{3\sqrt[3]{a - \#1} \left(\frac{\#1-b}{a-b}\right)^{2/3} {}_2F_1\left(\frac{1}{3}, \frac{2}{3}, \frac{4}{3}, \frac{a-\#1}{a-b}\right)}{(b - \#1)^{2/3}} \& \right] [c_1 + x] \right\}, \left\{ y(x) \rightarrow \text{InverseFunction} \right.$$

✓ **Maple** : cpu = 0.198 (sec), leaf count = 126

$$\left\{ x - \int^{y(x)} \frac{1}{\sqrt[3]{(-a-a)^2(-b+a)^2}} da - C1 = 0, x - \int^{y(x)} 2 \frac{1}{(i\sqrt{3}-1) \sqrt[3]{(-a-a)^2(-b+a)^2}} da - C1 = 0 \right.$$

2.519 ODE No. 519

$$y'(x)^3 - f(x) (ay(x)^2 + by(x) + c)^2 = 0$$

✓ **Mathematica** : cpu = 1.75704 (sec), leaf count = 473

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\frac{3(2\#1a - \sqrt{b^2 - 4ac} + b) \left(\frac{2\#1a + \sqrt{b^2 - 4ac} + b}{\sqrt{b^2 - 4ac}} \right)^{2/3} {}_2F_1 \left(\frac{1}{3}, \frac{2}{3}, \frac{4}{3}, \frac{-b - 2a\#1 + \sqrt{b^2 - 4ac}}{2\sqrt{b^2 - 4ac}} \right)}{2^{2/3} a (\#1(\#1a + b) + c)^{2/3}} \right] \right. \right.$$

✓ **Maple** : cpu = 0.37 (sec), leaf count = 197

$$\left\{ \int^{y(x)} (a^2a + ab + c)^{-2/3} da + \int^x -1 \sqrt[3]{f(a) (a(y(x))^2 + by(x) + c)^2 (a(y(x))^2 + by(x) + c)^{-2/3}} dx \right.$$

2.520 ODE No. 520

$$y'(x)^3 + y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 219.247 (sec), leaf count = 3323

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\frac{\left(243\#1^2 - 27\sqrt{81\#1^2 + 12}\#1 - 24\sqrt[3]{2}\sqrt[6]{3} \tan^{-1} \left(\frac{1}{\sqrt{3}} - \left(\frac{2}{3} \right)^{2/3} \sqrt[3]{\sqrt{81\#1^2 + 12}} \right) \right)}{\dots} \right] \right. \right.$$

✓ **Maple** : cpu = 0.098 (sec), leaf count = 245

$$\left\{ x - \int^{y(x)} 6 \frac{\sqrt[3]{108-a+12\sqrt{81-a^2+12}}}{(108-a+12\sqrt{81-a^2+12})^{2/3}-12} da - C1 = 0, x - \int^{y(x)} 12 \frac{1}{(i\sqrt{3}-1) \left(\sqrt[3]{108-a+12\sqrt{81-a^2+12}} \right)} da - C1 = 0 \right.$$

2.521 ODE No. 521

$$y'(x)^3 + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0044065 (sec), leaf count = 14

$$\{ \{ y(x) \rightarrow c_1 x + c_1^3 \} \}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 33

$$\left\{ y(x) = -\frac{2x}{9}\sqrt{-3x}, y(x) = \frac{2x}{9}\sqrt{-3x}, y(x) = _C1^3 + _C1 x \right\}$$

2.522 ODE No. 522

$$y'(x)^3 - (x + 5)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0043073 (sec), leaf count = 20

$$\{ \{ y(x) \rightarrow c_1 x - c_1^3 + 5c_1 \} \}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 46

$$\left\{ y(x) = -\frac{2x+10}{9}\sqrt{3x+15}, y(x) = \frac{2x+10}{9}\sqrt{3x+15}, y(x) = _C1^3 + _C1 x + 5_C1 \right\}$$

2.523 ODE No. 523

$$-axy'(x) + x^3 + y'(x)^3 = 0$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.056 (sec), leaf count = 299

$$\left\{ y(x) = \int -\frac{i}{12} \left(\left(-108x^3 + 12\sqrt{-3x^3(4a^3 - 27x^3)} \right)^{\frac{2}{3}} \sqrt{3} - 12\sqrt{3}ax - i \left(-108x^3 + 12\sqrt{-3x^3(4a^3 - 27x^3)} \right)^{\frac{2}{3}} \right) dx \right\}$$

2.524 ODE No. 524

$$y'(x)^3 - 2y(x)y'(x) + y(x)^2 = 0$$

✗ **Mathematica** : cpu = 0 (sec), leaf count = 0 , crash

Kernel Crash

✓ **Maple** : cpu = 0.06 (sec), leaf count = 295

$$\left\{ x - \int^{y(x)} 6 \frac{\sqrt[3]{-108 a^2 + 12 \sqrt{3} \sqrt{-a^3 (27 a - 32)}}}{\left(-108 a^2 + 12 \sqrt{3} \sqrt{-a^3 (27 a - 32)}\right)^{2/3} + 24 a} d a - C1 = 0, x - \int^{y(x)} 24 \frac{1}{(i \sqrt{3} - 1)} d a - C1 = 0 \right\}$$

2.525 ODE No. 525

$$-axy(x)y'(x) + 2ay(x)^2 + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0630913 (sec), leaf count = 135

$$\left\{ \left\{ y(x) \rightarrow c_1 \exp \left(\frac{1}{2} \left(\frac{ax^2}{2} + \frac{1}{2} \sqrt{ax} \sqrt{ax^2 - 8} - 4 \log \left(\sqrt{a} \sqrt{ax^2 - 8} + ax \right) \right) \right) \right\}, \left\{ y(x) \rightarrow c_1 \exp \left(\frac{1}{2} \left(\frac{ax^2}{2} + \frac{1}{2} \sqrt{ax} \sqrt{ax^2 - 8} - 4 \log \left(\sqrt{a} \sqrt{ax^2 - 8} + ax \right) \right) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.066 (sec), leaf count = 125

$$\left\{ y(x) = C1 \left(a^2 x \frac{1}{\sqrt{a^2}} + \sqrt{a^2 x^2 - 8 a} \right)^{-2 \frac{a}{\sqrt{a^2}}} e^{\frac{ax^2}{4} + \frac{x}{4} \sqrt{a^2 x^2 - 8 a}}, y(x) = C1 \left(a^2 x \frac{1}{\sqrt{a^2}} + \sqrt{a^2 x^2 - 8 a} \right)^2 \right\}$$

2.526 ODE No. 526

$$-x^3 y(x)^3 - (x^2 + xy(x) + y(x)^2) y'(x)^2 + (x^3 y(x) + x^2 y(x)^2 + xy(x)^3) y'(x) + y'(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.0115076 (sec), leaf count = 45

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

✓ **Maple** : cpu = 0.016 (sec), leaf count = 32

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

2.527 ODE No. 527

$$-xy(x)^4y'(x) + y'(x)^3 - y(x)^5 = 0$$

X Mathematica : cpu = 300. (sec), leaf count = 0 , timed out

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✓ Maple : cpu = 1.042 (sec), leaf count = 43

$$\left\{ y(x) = -C1 \sqrt{\frac{-C1^{10}}{(-C1^4x - 1)^2}}, y(x) = -\frac{3\sqrt{3}}{2}x^{-\frac{3}{2}}, y(x) = \frac{3\sqrt{3}}{2}x^{-\frac{3}{2}} \right\}$$

2.528 ODE No. 528

$$abx + ay'(x)^2 + by(x) + y'(x)^3 = 0$$

X Mathematica : cpu = 300.025 (sec), leaf count = 0 , timed out

\$Aborted

✓ Maple : cpu = 0.109 (sec), leaf count = 95

$$\left\{ y(x) = -ax - \frac{a \left(e^{\text{RootOf}(-2_Z a^2 - 3 e^2 - Z + 8 a e^{-Z} + 2_C1 b - 5 a^2 - 2 b x)} - a \right)^2 + \left(e^{\text{RootOf}(-2_Z a^2 - 3 e^2 - Z + 8 a e^{-Z} + 2_C1 b - 5 a^2 - 2 b x)} - a \right)}{b} \right\}$$

2.529 ODE No. 529

$$y'(x)^3 + xy'(x)^2 - y(x) = 0$$

✓ Mathematica : cpu = 53.8445 (sec), leaf count = 1758

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(\frac{4 \cdot 2^{2/3} x^4}{3 \left(-16x^3 - 72x^2 - 108x + 216c_1 + \sqrt{4(-4x^2 - 12x - 9)^3 + (-16x^3 - 72x^2 - 108x + 216c_1)^2} \right)} \right) \right\} \right\}$$

✓ Maple : cpu = 0.07 (sec), leaf count = 1473

$$\left\{ y(x) = 0, y(x) = \left(\frac{1}{6} \sqrt[3]{-36x^2 - 54x + 108_C1 - 8x^3 + 27 + 6\sqrt{-48_C1x^3 - 216x^2_C1 - 24x^3}} \right) \right\}$$

2.530 ODE No. 530

$$y'(x)^3 - y(x)y'(x)^2 + y(x)^2 = 0$$

✗ **Mathematica** : cpu = 0 (sec), leaf count = 0 , crash

Kernel Crash

✓ **Maple** : cpu = 0.174 (sec), leaf count = 421

$$\left\{ x - \int^{y(x)} 6 \frac{\sqrt[3]{-108_a^2 + 8_a^3 + 12 \sqrt{-3_a^4 (4_a - 27)}}}{4_a^2 + 2_a \sqrt[3]{-108_a^2 + 8_a^3 + 12 \sqrt{-3_a^4 (4_a - 27)}} + (-108_a^2 + 8_a^3 + 12 \sqrt{-3_a^4 (4_a - 27)})} \right.$$

2.531 ODE No. 531

$$-x^3y(x)^6 - (x^2 + y(x)^4 + xy(x)^2) y'(x)^2 + (x^3y(x)^2 + x^2y(x)^4 + xy(x)^6) y'(x) + y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 69.5962 (sec), leaf count = 0 , could not solve

`DSolve[-(x^3*y[x]^6) + (x^3*y[x]^2 + x^2*y[x]^4 + x*y[x]^6)*Derivative[1][y][x] + Derivative[1][y][x]^2 == 0, y[x]]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x), x)^2 - (y(x)^4 + x*y(x)^2 + x^2)*diff(y(x), x)^2 + (x*y(x)^6 + x^2*y(x)^4 + x^3*y(x)^6) = 0, y(x))`

2.532 ODE No. 532

$$ay'(x)^3 + by'(x)^2 + cy'(x) - d - y(x) = 0$$

✗ **Mathematica** : cpu = 300.023 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.161 (sec), leaf count = 1208

$$\left\{ x - \int^{y(x)} 6 \frac{a \sqrt[3]{108 a^2_a - a}}{(108 a^2_a + 12 \sqrt{3} \sqrt{27_a a^2 a^2} + 54_a a^2 d + 18_a abc - 4_a b^3 + 27 a^2 d^2 + 18 abcd + 4 ac^3)} \right.$$

2.533 ODE No. 533

$$a + xy'(x)^3 - y(x)y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 300.083 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.036 (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

$$4xy'(x)^3 - 6y(x)y'(x)^2 + 3y(x) - x = 0$$

✗ **Mathematica** : cpu = 300.017 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.066 (sec), leaf count = 102

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

2.535 ODE No. 535

$$8xy'(x)^3 - 12y(x)y'(x)^2 + 9y(x) = 0$$

✗ **Mathematica** : cpu = 300. (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.052 (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

$$bx(x^2 - a^2)y'(x)^2 + (x^2 - a^2)y'(x)^3 + bx + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0250496 (sec), leaf count = 86

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

✓ **Maple** : cpu = 0.041 (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

$$(x^6 + 3xy(x)^2)y'(x) - 2x^5y(x) + x^3y'(x)^3 - 3x^2y(x)y'(x)^2 - y(x)^3 = 0$$

✗ **Mathematica** : cpu = 300.002 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 5.589 (sec), leaf count = 209

$$\left\{ y(x) = \text{RootOf} \left(-\ln(x) + \int^{-z} -\frac{1}{6_a} \left(34^{2/3} \left(\frac{3\sqrt{81_a^2 + 12_a - 27_a^2 - 4}}{(27_a^2 + 4)^2} \right)^{2/3} \sqrt{81_a^2 + 12_a} \right) \right) \right\}$$

2.538 ODE No. 538

$$2(xy'(x) + y(x))^3 - y(x)y'(x) = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.934 (sec), leaf count = 3181

$$\left\{ \int_{-b}^x -\frac{1}{-a} \left(6^{\frac{2}{3}} \left(y(x) \left(\sqrt{3} \sqrt{\frac{y(x)(27y(x)-a-2)}{-a}} - 9y(x) \right) - a^2 \right)^{\frac{2}{3}} - 6y(x) - a \sqrt[3]{6} \sqrt[3]{y(x) \left(\sqrt{3} \sqrt{\frac{y(x)(27y(x)-a-2)}{-a}} - 9y(x) \right)} \right) \right\}$$

2.539 ODE No. 539

$$\sin(x)y'(x)^3 - y'(x)^2 (y(x)\sin(x) - \cos^2(x)) - y'(x) (y(x)\cos^2(x) + \sin(x)) + y(x)\sin(x) = 0$$

✓ **Mathematica** : cpu = 0.0281138 (sec), leaf count = 45

$$\left\{ \left\{ y(x) \rightarrow c_1 e^x \right\}, \left\{ y(x) \rightarrow c_1 - \cos(x) \right\}, \left\{ y(x) \rightarrow c_1 - \log\left(\sin\left(\frac{x}{2}\right)\right) + \log\left(\cos\left(\frac{x}{2}\right)\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.375 (sec), leaf count = 32

$$\{y(x) = _C1 e^x, y(x) = -\cos(x) + _C1, y(x) = -\ln(\csc(x) - \cot(x)) + _C1\}$$

2.540 ODE No. 540

$$2y(x)y'(x)^3 - y(x)y'(x)^2 + 2xy'(x) - x = 0$$

✓ **Mathematica** : cpu = 0.0206383 (sec), leaf count = 69

$$\left\{ \left\{ y(x) \rightarrow c_1 + \frac{x}{2} \right\}, \left\{ y(x) \rightarrow \frac{(3c_1 - 2ix^{3/2})^{2/3}}{2^{2/3}} \right\}, \left\{ y(x) \rightarrow \frac{(3c_1 + 2ix^{3/2})^{2/3}}{2^{2/3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.218 (sec), leaf count = 109

$$\left\{ x + \frac{x_C1}{y(x)} \left(\frac{1}{y(x)} (-x - \sqrt{-xy(x) + y(x)}) \right)^{-\frac{2}{3}} \left(\frac{1}{y(x)} (\sqrt{-xy(x) + y(x)}) \right)^{-\frac{2}{3}} = 0, x + \frac{x_C1}{y(x)} \left(\frac{1}{y(x)} \right) \right\}$$

2.541 ODE No. 541

$$y(x)^2 y'(x)^3 + 2xy'(x) - y(x) = 0$$

✗ **Mathematica** : cpu = 299.999 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.77 (sec), leaf count = 103

$$\left\{ y(x) = \sqrt{-C1^3 + 2x_C1}, y(x) = -\frac{2i}{3} \sqrt[4]{2\sqrt[4]{3}\sqrt[4]{-x^3}}, y(x) = \frac{2i}{3} \sqrt[4]{2\sqrt[4]{3}\sqrt[4]{-x^3}}, y(x) = -\sqrt{-C1^3 + 2x_C1} \right\}$$

2.542 ODE No. 542

$$16y(x)^2y'(x)^3 + 2xy'(x) - y(x) = 0$$

✗ **Mathematica** : cpu = 300.001 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.744 (sec), leaf count = 107

$$\left\{ y(x) = \sqrt{16_C1^3 + 2x_C1}, y(x) = -\frac{i}{3}\sqrt[4]{2}\sqrt[4]{3}\sqrt[4]{-x^3}, y(x) = \frac{i}{3}\sqrt[4]{2}\sqrt[4]{3}\sqrt[4]{-x^3}, y(x) = -\sqrt{16_C1^3 + 2x_C1} \right.$$

2.543 ODE No. 543

$$x(x^2 + 1)y'(x) - x^2y(x) + y(x)^3(-y'(x)^2) + xy(x)^2y'(x)^3 = 0$$

✗ **Mathematica** : cpu = 300.004 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 1.629 (sec), leaf count = 325

$$\left\{ y(x) = -\frac{i}{2}\sqrt[4]{-16x^4 + 40x^2 + 2 - 2\sqrt{-512x^6 + 192x^4 - 24x^2 + 1}}, y(x) = -\frac{i}{2}\sqrt[4]{-16x^4 + 40x^2 + 2 + 2\sqrt{-512x^6 + 192x^4 - 24x^2 + 1}} \right.$$

2.544 ODE No. 544

$$x^7y(x)^2y'(x)^3 - (3x^6y(x)^3 - 1)y'(x)^2 + 3x^5y(x)^4y'(x) - x^4y(x)^5 = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 1.141 (sec), leaf count = 7860

2.545 ODE No. 545

$$y'(x)^4 - (y(x) - a)^3(y(x) - b)^2 = 0$$

✓ **Mathematica** : cpu = 0.716669 (sec), leaf count = 383

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{\sqrt[4]{a - \#1} \sqrt{\frac{\#1 - b}{a - b}} B_{\frac{a - \#1}{a - b}} \left(\frac{1}{4}, \frac{1}{2} \right)}{\sqrt{b - \#1} \sqrt[4]{\frac{a - \#1}{a - b}}} \& \right] [c_1 - \sqrt[4]{-1}x] \right\}, \left\{ y(x) \rightarrow \text{InverseFunction} \right.$$

✓ **Maple** : cpu = 0.345 (sec), leaf count = 141

$$\left\{ x - \int^{y(x)} \frac{1}{\sqrt[4]{(-a - a)^3 (-a - b)^2}} d_a - _C1 = 0, x - \int^{y(x)} -i \frac{1}{\sqrt[4]{(-a - a)^3 (-a - b)^2}} d_a - _C1 = 0, \right.$$

2.546 ODE No. 546

$$y'(x)^4 + 3(x - 1)y'(x)^2 - 3(2y(x) - 1)y'(x) + 3x = 0$$

✗ **Mathematica** : cpu = 300.007 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.31 (sec), leaf count = 245

$$\left\{ y(x) = -x + \frac{5}{6}, y(x) = x + \frac{1}{6}, y(x) = \frac{x}{6} \left(3 \left(-_C1/2 - 1/2 \sqrt{-C1^2 + 4x} \right)^2 + 3 \right) \left(-\frac{_C1}{2} - \frac{1}{2} \sqrt{-C1} \right) \right.$$

2.547 ODE No. 547

$$y'(x)^4 - 4y(x) (xy'(x) - 2y(x))^2 = 0$$

✓ **Mathematica** : cpu = 1.29098 (sec), leaf count = 490

$$\left\{ \text{Solve} \left[\frac{\sqrt{(x^2 - 4\sqrt{y(x)}) y(x)} \log \left(\sqrt{x^2 - 4\sqrt{y(x)}} + x \right)}{\sqrt{x^2 - 4\sqrt{y(x)}} \sqrt{y(x)}} - \frac{\sqrt{x^2 - 4\sqrt{y(x)}} \sqrt{y(x)} \log(y(x))}{4\sqrt{(x^2 - 4\sqrt{y(x)}) y(x)}} + \frac{1}{4} \log(y(x)) \right. \right.$$

✓ **Maple** : cpu = 0.396 (sec), leaf count = 118

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

2.548 ODE No. 548

$$y'(x)^6 - (y(x) - a)^4 (y(x) - b)^3 = 0$$

✓ **Mathematica** : cpu = 1.00156 (sec), leaf count = 569

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{\sqrt[3]{a - \#1} \sqrt{\frac{\#1 - b}{a - b}} B_{\frac{a - \#1}{a - b}} \left(\frac{1}{3}, \frac{1}{2} \right)}{\sqrt{b - \#1} \sqrt[3]{\frac{a - \#1}{a - b}}} \right] [c_1 - ix] \right\}, \left\{ y(x) \rightarrow \text{InverseFunction} \left[\dots \right] \right. \right.$$

✓ **Maple** : cpu = 0.477 (sec), leaf count = 241

$$\left\{ x - \int^{y(x)} \frac{1}{\sqrt[6]{(-a - a)^4 (-a - b)^3}} d_{-a - } C1 = 0, x - \int^{y(x)} \frac{-2i}{\sqrt{3 - i} \sqrt[6]{(-a - a)^4 (-a - b)^3}} d_{-a - } C1 \right.$$

2.549 ODE No. 549

$$x^2 (y'(x)^2 + 1)^3 - a^2 = 0$$

✓ **Mathematica** : cpu = 0.24886 (sec), leaf count = 406

$$\left\{ \left\{ y(x) \rightarrow c_1 - \frac{\sqrt[3]{x} (2x^{2/3} + (1 + i\sqrt{3}) a^{2/3}) \sqrt{\frac{-2x^{2/3} + (-1 - i\sqrt{3}) a^{2/3}}{x^{2/3}}}}{2\sqrt{2}} \right\}, \left\{ y(x) \rightarrow c_1 + \frac{\sqrt[3]{x} \sqrt{\frac{-2x^{2/3} + (-1 - i\sqrt{3}) a^{2/3}}{x^{2/3}}}}{2\sqrt{2}} \right. \right.$$

✓ **Maple** : cpu = 0.354 (sec), leaf count = 552

$$\left\{ y(x) = -1\sqrt{-\frac{1}{a^4} (a^2 x)^{4/3} \left((a^2 x)^{2/3} - a^2 \right) \left((a^2 x)^{2/3} - a^2 \right) (a^2 x)^{-2/3}} + C1, y(x) = 1\sqrt{-\frac{1}{a^4} (a^2 x)^{4/3} \left((a^2 x)^{2/3} - a^2 \right) \left((a^2 x)^{2/3} - a^2 \right) (a^2 x)^{-2/3}} + C1 \right.$$

2.550 ODE No. 550

$$-ay(x)^s - bx^{\frac{rs}{r-s}} + y'(x)^r = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.291 (sec), leaf count = 61

$$\left\{ - \int_{-b}^{y(x)} \left(x(r-s) \sqrt[r]{a_{-} a^s + b x^{\frac{rs}{r-s}} - r_{-} a} \right)^{-1} d_{-} a(r-s) + \ln(x) -_{-} C1 = 0 \right\}$$

2.551 ODE No. 551

$$y'(x)^n - f(x)^n (y(x) - a)^{n+1} (y(x) - b)^{n-1} = 0$$

✓ **Mathematica** : cpu = 0.469094 (sec), leaf count = 84

$$\left\{ \left\{ y(x) \rightarrow \frac{-a(a-b)^n \left(\int_1^x (-1)^{\frac{1}{n}+1} f(K[1]) dK[1] + c_1 \right)^n - bn^n}{-(a-b)^n \left(\int_1^x (-1)^{\frac{1}{n}+1} f(K[1]) dK[1] + c_1 \right)^n - n^n} \right\} \right\}$$

✓ **Maple** : cpu = 0.4 (sec), leaf count = 127

$$\left\{ y(x) = -a \left(\frac{n}{-_{-} C1 a +_{-} C1 b - a \int f(x) dx + b \int f(x) dx} \right)^n \left(-1 + \left(\frac{n}{-_{-} C1 a +_{-} C1 b - a \int f(x) dx} \right)^n \right) \right\}$$

2.552 ODE No. 552

$$y'(x)^n - f(x)g(y(x)) = 0$$

✓ **Mathematica** : cpu = 0.309137 (sec), leaf count = 39

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\int_1^{\#1} g(K[1])^{-1/n} dK[1] \& \right] \left[\int_1^x f(K[2])^{\frac{1}{n}} dK[2] + c_1 \right] \right\} \right\}$$

✓ **Maple** : cpu = 0.08 (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

$$ay'(x)^m + by'(x)^n - y(x) = 0$$

✓ **Mathematica** : cpu = 0.122367 (sec), leaf count = 51

$$\text{Solve} \left[\left\{ x = \frac{amK\$90073^{m-1}}{m-1} + \frac{bnK\$90073^{n-1}}{n-1} + c_1, y(x) = aK\$90073^m + bK\$90073^n \right\}, \{y(x), K\$90073\} \right]$$

✓ **Maple** : cpu = 0.05 (sec), leaf count = 36

$$\left\{ x - \int^{y(x)} (\text{RootOf}(-a_Z^m - b_Z^n + _a))^{-1} d_a - _C1 = 0, y(x) = 0 \right\}$$

2.554 ODE No. 554

$$x^{n-1}y'(x)^n - nxy'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0752462 (sec), leaf count = 49

$$\text{Solve} \left[\left\{ y(x) = \frac{K\$90238nx^2 - K\$90238^n x^n}{x}, x = c_1(K\$90238 - K\$90238n)^{\frac{n}{1-n}} \right\}, \{y(x), K\$90238\} \right]$$

✓ **Maple** : cpu = 0.359 (sec), leaf count = 29

$$\left\{ y(x) = _C1 \sqrt[n]{\frac{x}{_C1}} - \frac{(_C1^{-1})^{-n}}{_C1} \right\}$$

2.555 ODE No. 555

$$xy'(x) + \sqrt{y'(x)^2 + 1} - y(x) = 0$$

✗ **Mathematica** : cpu = 301.531 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.361 (sec), leaf count = 15

$$\left\{ y(x) = \sqrt{_C1^2 + 1} + x_C1 \right\}$$

2.556 ODE No. 556

$$xy'(x)^2 + \sqrt{y'(x)^2 + 1} + y(x) = 0$$

✓ **Mathematica** : cpu = 6.326 (sec), leaf count = 60

$$\text{Solve} \left[\left\{ x = \frac{c_1}{(K\$90445 + 1)^2} + \frac{-\sqrt{K\$90445^2 + 1} - \sinh^{-1}(K\$90445)}{(K\$90445 + 1)^2}, y(x) = K\$90445^2(-x) - \sqrt{K\$90445^2 + 1} \right. \right.$$

✓ **Maple** : cpu = 0.519 (sec), leaf count = 581

$$\left\{ -C1 x^2 \left(\sqrt{-4xy(x) + 2 + 2\sqrt{4x^2 - 4xy(x) + 1}} - 2x \right)^{-2} + x + 2 \frac{x^2}{\left(\sqrt{-4xy(x) + 2 + 2\sqrt{4x^2 - 4xy(x) + 1}} \right)} \right.$$

2.557 ODE No. 557

$$x(y'(x) + \sqrt{y'(x)^2 + 1}) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0181082 (sec), leaf count = 39

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{c_1 x - x^2} \right\}, \left\{ y(x) \rightarrow \sqrt{c_1 x - x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.448 (sec), leaf count = 78

$$\left\{ -C1 \frac{1}{\sqrt{\frac{(y(x))^2 + x^2}{x^2(y(x))^2}}} \left(-\frac{x^2 - (y(x))^2}{2xy(x)} + \frac{1}{2} \sqrt{\frac{x^4 + 2x^2(y(x))^2 + (y(x))^4}{x^2(y(x))^2}} \right)^{-1} + x = 0 \right\}$$

2.558 ODE No. 558

$$ax\sqrt{y'(x)^2 + 1} + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.593983 (sec), leaf count = 395

$$\left\{ \text{Solve} \left[\frac{a \left(-\log \left(\frac{(a^2-1) \left(a\sqrt{a^2 - \frac{y(x)^2}{x^2} - 1} + a^2 - \frac{iy(x)}{x} - 1 \right)}{a^3 \left(\frac{y(x)}{x} - i \right)} \right) + \log \left(-\frac{(a^2-1) \left(a\sqrt{a^2 - \frac{y(x)^2}{x^2} - 1} + a^2 + \frac{iy(x)}{x} - 1 \right)}{a^3 \left(\frac{y(x)}{x} + i \right)} \right) + \log \left(\frac{y(x)}{x} \right)}{2(a^2 - 1)} \right] \right.$$

✓ **Maple** : cpu = 0.49 (sec), leaf count = 223

$$\left\{ x - \frac{1}{C1} e^{\frac{1}{a} \text{Arcsinh} \left(\frac{1}{(a^2-1)x} \left(\sqrt{-a^2x^2 + x^2 + (y(x))^2} a + y(x) \right) \right)} \frac{1}{\sqrt{\frac{1}{(a^2-1)^2 x^2} \left(-a^2x^2 + a^2 (y(x))^2 + 2 \sqrt{-a^2x^2 + x^2 + (y(x))^2} a + y(x) \right)}}$$

2.559 ODE No. 559

$$-ay(x)y'(x) - ax + y(x)\sqrt{y'(x)^2 + 1} = 0$$

✓ **Mathematica** : cpu = 0.308467 (sec), leaf count = 212

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{a^6(-x^2) + 3a^4x^2 + 2a^2xe^{a^2c_1-c_1} - 2xe^{a^2c_1-c_1} + e^{2a^2c_1-2c_1} - 3a^2x^2 + x^2}}{\sqrt{a^6 - 3a^4 + 3a^2 - 1}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{a^6(-x^2) + 3a^4x^2 + 2a^2xe^{a^2c_1-c_1} - 2xe^{a^2c_1-c_1} + e^{2a^2c_1-2c_1} - 3a^2x^2 + x^2}}{\sqrt{a^6 - 3a^4 + 3a^2 - 1}} \right\} \right.$$

✓ **Maple** : cpu = 0.626 (sec), leaf count = 223

$$\left\{ x - e^{\int \frac{1}{(a^2-1)y(x)} \left(-a^2x + \sqrt{a^2x^2 + a^2(y(x))^2 - (y(x))^2} \right) dx} a \left(a\sqrt{-a^2+1} - a \right) \frac{1}{\sqrt{-a^2+1}} \left(-a + \sqrt{-a^2+1} \right)^{-1} \left(-a^2a + \sqrt{-a^2+1} - a \right)^{-1} d_a \right.$$

2.560 ODE No. 560

$$ay(x)\sqrt{y'(x)^2 + 1} - x^2 - 2xy(x)y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 21.0077 (sec), leaf count = 110

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{a^2c_1^2(-x^2) - 4a^2c_1x - 4a^2 + 4x^2}}{\sqrt{a^2c_1^2 - 4}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{a^2c_1^2(-x^2) - 4a^2c_1x - 4a^2 + 4x^2}}{\sqrt{a^2c_1^2 - 4}} \right\} \right\}$$

✓ **Maple** : cpu = 1.295 (sec), leaf count = 1512

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

2.561 ODE No. 561

$$f(x^2 + y(x)^2)\sqrt{y'(x)^2 + 1} - xy'(x) + y(x) = 0$$

✗ **Mathematica** : cpu = 300.001 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 2.34 (sec), leaf count = 50

$$\left\{ y(x) = x \left(\tan \left(\text{RootOf} \left(-2 - Z + \int \frac{x^2((\tan(-Z))^2 + 1)}{(\tan(-Z))^2} \frac{f(-a)}{-a} \frac{1}{\sqrt{-(f(-a))^2 + -a}} d - a + 2 - C1 \right) \right) \right)^{-1} \right\}$$

2.562 ODE No. 562

$$a\sqrt[3]{y'(x)^3 + 1} + bxy'(x) - y(x) = 0$$

✗ **Mathematica** : cpu = 300.342 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.476 (sec), leaf count = 3961

$$\left\{ x - \left(\frac{1}{2b^3x^3 + 2a^3} \left(2b^2x^2y(x) \sqrt[3]{-4b^6x^6 - 8a^3b^3x^3 - 4b^3x^3(y(x))^3} + 4\sqrt{b^6x^6 + 2a^3b^3x^3 + 2b^3x^3(y(x))^2} \right) \right) \right\}$$

2.563 ODE No. 563

$$ay(x) + b + xy'(x) + \log(y'(x)) = 0$$

✓ **Mathematica** : cpu = 0.103115 (sec), leaf count = 59

$$\text{Solve} \left[a \left(\frac{(a+1) \log(1 - aW(xe^{-ay(x)-b}))}{a^2} + \frac{W(xe^{-ay(x)-b})}{a} \right) + ay(x) = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.138 (sec), leaf count = 66

$$\left\{ - \left(e^{-ay(x) - \text{lambertW}(xe^{-ay(x)-b}) - b} \right)^{-(a+1)^{-1}} _C1 + x - \frac{e^{ay(x) + \text{lambertW}(xe^{-ay(x)-b}) + b}}{a} = 0 \right\}$$

2.564 ODE No. 564

$$a(xy'(x) - y(x)) + \log(y'(x)) = 0$$

✓ **Mathematica** : cpu = 0.0431319 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow -\frac{e^{-c_1}(e^{c_1}c_1 - ax)}{a} \right\} \right\}$$

✓ **Maple** : cpu = 0.024 (sec), leaf count = 36

$$\left\{ y(x) = \frac{1}{a} \ln \left(-\frac{1}{ax} \right) - a^{-1}, y(x) = x_C1 + \frac{\ln(_C1)}{a} \right\}$$

2.565 ODE No. 565

$$y'(x) + y(x) \log(y'(x)) - xy(x) - y(x) \log(y(x)) = 0$$

✓ **Mathematica** : cpu = 0.011936 (sec), leaf count = 25

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

✓ **Maple** : cpu = 0.122 (sec), leaf count = 17

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

2.566 ODE No. 566

$$y'(x) + \sin(y'(x)) - x = 0$$

✗ **Mathematica** : cpu = 0.0110075 (sec), leaf count = 0 , could not solve

DSolve[-x + Sin[Derivative[1][y][x]] + Derivative[1][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.032 (sec), leaf count = 16

$$\left\{ y(x) = \int \text{RootOf}(_Z + \sin(_Z) - x) dx + _C1 \right\}$$

2.567 ODE No. 567

$$a \cos(y'(x)) + by'(x) + x = 0$$

✗ **Mathematica** : cpu = 0.0117236 (sec), leaf count = 0 , could not solve

DSolve[x + a*Cos[Derivative[1][y][x]] + b*Derivative[1][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.029 (sec), leaf count = 18

$$\left\{ y(x) = \int \text{RootOf}(a \cos(_Z) + _Z b + x) dx + _C1 \right\}$$

2.568 ODE No. 568

$$y'(x)^2 \sin(y'(x)) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0365633 (sec), leaf count = 28

Solve[{x = c1 + K\$133700 sin(K\$133700) - cos(K\$133700), y(x) = K\$133700² sin(K\$133700)}, {y(x), x}]

✓ **Maple** : cpu = 0.06 (sec), leaf count = 32

$$\left\{ x - \int^{y(x)} (\text{RootOf}(\sin(_Z) _Z^2 - _a))^{-1} d_a - _C1 = 0, y(x) = 0 \right\}$$

2.569 ODE No. 569

$$(y'(x)^2 + 1) \sin^2(y(x) - xy'(x)) - 1 = 0$$

✓ **Mathematica** : cpu = 0.0412984 (sec), leaf count = 59

$$\left\{ \left\{ y(x) \rightarrow c_1 x - \frac{1}{2} \cos^{-1} \left(\frac{c_1^2 - 1}{c_1^2 + 1} \right) \right\}, \left\{ y(x) \rightarrow c_1 x + \frac{1}{2} \cos^{-1} \left(\frac{c_1^2 - 1}{c_1^2 + 1} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.524 (sec), leaf count = 147

$$\left\{ y(x) = x_C1 - \arcsin \left(\frac{1}{\sqrt{-C1^2 + 1}} \right), y(x) = x_C1 + \arcsin \left(\frac{1}{\sqrt{-C1^2 + 1}} \right), y(x) = -\sqrt{1-x}\sqrt{x} \right\}$$

2.570 ODE No. 570

$$(y'(x)^2 + 1) (ax + \tan^{-1}(y'(x))) + y'(x) = 0$$

✗ **Mathematica** : cpu = 0.107118 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[1][y][x] + (a*x + ArcTan[Derivative[1][y][x]])*(1 + Derivative[1][y][x])]`

✓ **Maple** : cpu = 0.056 (sec), leaf count = 30

$$\left\{ y(x) = \int \tan \left(\text{RootOf} \left(ax(\tan(_Z))^2 + (\tan(_Z))^2_Z + ax + \tan(_Z) + _Z \right) \right) dx + _C1 \right\}$$

2.571 ODE No. 571

$$ax^n f(y'(x)) + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.106493 (sec), leaf count = 114

$$\text{Solve} \left[\left\{ y(x) = af(K\$134037)x^n + K\$134037x, x = \left(nf(K\$134037) \right)^{\frac{1}{n}-1} \left(\int_1^{K\$134037} -\frac{f(K[1])^{\frac{n-1}{n}-1}}{an} dK \right) \right\} \right]$$

✓ **Maple** : cpu = 0.264 (sec), leaf count = 199

$$\left\{ [y(_T) = a \left(\left(-\frac{1}{anf(_T)} \left(-_C1 an + \int (f(_T))^{-n-1} d_Tn - \int (f(_T))^{-n-1} d_T \right) \right)^{(n-1)^{-1}} (f(_T)) \right] \right\}$$

2.572 ODE No. 572

$$f(y'(x))(xy'(x) - y(x))^n + y(x)g(y'(x)) + xh(y'(x)) = 0$$

✗ **Mathematica** : cpu = 0.0309085 (sec), leaf count = 0 , could not solve

DSolve[x*h[Derivative[1][y][x]] + g[Derivative[1][y][x]]*y[x] + f[Derivative[1][y][x]]*y[x] + x*Derivative[1][y][x]^n == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve((x*diff(y(x),x)-y(x))^n*f(diff(y(x),x))+y(x)*g(diff(y(x),x))+x*h(diff(y(x),x)))=

2.573 ODE No. 573

$$f(xy'(x)^2) + 2xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0202684 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow f(c_1) - 2\sqrt{c_1}\sqrt{x}, y(x) \rightarrow f(c_1) + 2\sqrt{c_1}\sqrt{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.16 (sec), leaf count = 16

$$\left\{ y(x) = f\left(\frac{-C1^2}{4}\right) + _C1 \sqrt{x} \right\}$$

2.574 ODE No. 574

$$f\left(x - \frac{3}{2}y'(x)^2\right) + y'(x)^3 - y(x) = 0$$

✓ **Mathematica** : cpu = 0.015725 (sec), leaf count = 102

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{9}\left(9f(c_1) + 2\sqrt{6}x\sqrt{x-c_1} - 2\sqrt{6}c_1\sqrt{x-c_1}\right), y(x) \rightarrow \frac{1}{9}\left(9f(c_1) - 2\sqrt{6}x\sqrt{x-c_1} + 2\sqrt{6}c_1\sqrt{x-c_1}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.154 (sec), leaf count = 67

$$\left\{ y(x) = f(_C1) - \frac{2}{9}\sqrt{-6_C1^3 + 18_C1^2x - 18_C1x^2 + 6x^3}, y(x) = f(_C1) + \frac{2}{9}\sqrt{-6_C1^3 + 18_C1^2x - 18_C1x^2 + 6x^3} \right\}$$

2.575 ODE No. 575

$$y'(x)f(xy(x)y'(x) - y(x)^2) + x^2(-y'(x)) + xy(x) = 0$$

X Mathematica : cpu = 0.0314835 (sec), leaf count = 0 , could not solve

`DSolve[x*y[x] - x^2*Derivative[1][y][x] + f[-y[x]^2 + x*y[x]*Derivative[1][y][x]]*Deri`

X Maple : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)*f(x*y(x)*diff(y(x),x)-y(x)^2)-x^2*diff(y(x),x)+x*y(x)=0,y(x))`

2.576 ODE No. 576

$$\phi(f(x, y(x), y'(x)), g(x, y(x), y'(x))) = 0$$

X Mathematica : cpu = 0.00745211 (sec), leaf count = 0 , could not solve

`DSolve[phi[f[x, y[x], Derivative[1][y][x]], g[x, y[x], Derivative[1][y][x]]] == 0, y[x]`

X Maple : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(phi(f(x,y(x),diff(y(x),x)),g(x,y(x),diff(y(x),x)))=0,y(x))`

2.577 ODE No. 577

$$y'(x) = F\left(\frac{y(x)}{a+x}\right)$$

✓ Mathematica : cpu = 12.0873 (sec), leaf count = 240

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

✓ Maple : cpu = 0.032 (sec), leaf count = 28

$$\left\{ y(x) = -\text{RootOf} \left(\int^{-Z} (F(-_a) + _a)^{-1} d_a + \ln(x+a) + _C1 \right) (x+a) \right\}$$

2.578 ODE No. 578

$$y'(x) = F(y(x) - x^2) + 2x$$

✓ **Mathematica** : cpu = 16.3222 (sec), leaf count = 97

$$\text{Solve} \left[\int_1^{y(x)} - \frac{F(K[2] - x^2) \int_1^x - \frac{2K[1]F'(K[2]-K[1]^2)}{F(K[2]-K[1]^2)^2} dK[1] + 1}{F(K[2] - x^2)} dK[2] + \int_1^x \left(\frac{2K[1]}{F(y(x) - K[1]^2)} + 1 \right) dK[1] \right]$$

✓ **Maple** : cpu = 0.04 (sec), leaf count = 22

$$\left\{ y(x) = x^2 + \text{RootOf} \left(-x + \int^{-Z} (F(-a))^{-1} d_a + _C1 \right) \right\}$$

2.579 ODE No. 579

$$y'(x) = F\left(\frac{ax^2}{4} + \frac{bx}{2} + y(x)\right) - \frac{ax}{2}$$

✓ **Mathematica** : cpu = 13.0323 (sec), leaf count = 510

$$\text{Solve} \left[\int_1^{y(x)} - \frac{2F\left(K[2] + \frac{ax^2}{4} + \frac{bx}{2}\right) \int_1^x \left(\frac{2aK[1]F'(\frac{1}{4}aK[1]^2 + \frac{1}{2}bK[1] + K[2])}{(2F(\frac{1}{4}aK[1]^2 + \frac{1}{2}bK[1] + K[2]) + b)^2} + \frac{2F'(\frac{1}{4}aK[1]^2 + \frac{1}{2}bK[1] + K[2])}{2F(\frac{1}{4}aK[1]^2 + \frac{1}{2}bK[1] + K[2]) + b} - \frac{4F(\frac{1}{4}aK[1]^2 + \frac{1}{2}bK[1] + K[2])}{(2F(\frac{1}{4}aK[1]^2 + \frac{1}{2}bK[1] + K[2]) + b)^2} \right) dK[2] + \int_1^x \left(\frac{2K[1]}{F(y(x) - K[1]^2)} + 1 \right) dK[1] \right]$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 35

$$\left\{ y(x) = -\frac{ax^2}{4} - \frac{bx}{2} + \text{RootOf} \left(-x + 2 \int^{-Z} (2F(-a) + b)^{-1} d_a + _C1 \right) \right\}$$

2.580 ODE No. 580

$$y'(x) = e^{bx} F(e^{-bx} y(x))$$

✓ **Mathematica** : cpu = 24.8231 (sec), leaf count = 200

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{1}{bK[2] - e^{bx} F(e^{-bx} K[2])} - \int_1^x \left(\frac{F'(K[2]e^{-bK[1]})}{e^{bK[1]} F(K[2]e^{-bK[1]}) - bK[2]} - \frac{e^{bK[1]} F(K[2]e^{-bK[1]}) (F'(K[2]e^{-bK[1]})}{(e^{bK[1]} F(K[2]e^{-bK[1]}) - bK[2])^2} \right) dK[1] + 1 \right) dK[2] + \int_1^x \left(\frac{1}{2K[1]^3 F\left(\frac{y(x)K[1]^2 + \frac{1}{4}}{K[1]^2}\right)} + \frac{F'\left(\frac{K[2]K[1]^2 + \frac{1}{4}}{K[1]^2}\right)}{2K[1]^3 F\left(\frac{K[2]K[1]^2 + \frac{1}{4}}{K[1]^2}\right)^2} \right) dK[1] + 1 \right]$$

✓ **Maple** : cpu = 0.062 (sec), leaf count = 31

$$\left\{ y(x) = \frac{\text{RootOf}\left(-x + \int^{-Z} (F(_a) - _a b)^{-1} d_a + _C1\right)}{e^{-bx}} \right\}$$

2.581 ODE No. 581

$$y'(x) = \frac{x F\left(\frac{x^2 y(x) + \frac{1}{4}}{x^2}\right) + \frac{1}{2}}{x^3}$$

✓ **Mathematica** : cpu = 38.9149 (sec), leaf count = 141

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{F\left(\frac{x^2 K[2] + \frac{1}{4}}{x^2}\right) \int_1^x - \frac{F'\left(\frac{K[2]K[1]^2 + \frac{1}{4}}{K[1]^2}\right)}{2K[1]^3 F\left(\frac{K[2]K[1]^2 + \frac{1}{4}}{K[1]^2}\right)^2} dK[1] + 1}{F\left(\frac{x^2 K[2] + \frac{1}{4}}{x^2}\right)} dK[2] + \int_1^x \left(\frac{1}{2K[1]^3 F\left(\frac{y(x)K[1]^2 + \frac{1}{4}}{K[1]^2}\right)} + \frac{F'\left(\frac{K[2]K[1]^2 + \frac{1}{4}}{K[1]^2}\right)}{2K[1]^3 F\left(\frac{K[2]K[1]^2 + \frac{1}{4}}{K[1]^2}\right)^2} \right) dK[1] + 1 \right) dK[2] + \int_1^x \left(\frac{1}{2K[1]^3 F\left(\frac{y(x)K[1]^2 + \frac{1}{4}}{K[1]^2}\right)} + \frac{F'\left(\frac{K[2]K[1]^2 + \frac{1}{4}}{K[1]^2}\right)}{2K[1]^3 F\left(\frac{K[2]K[1]^2 + \frac{1}{4}}{K[1]^2}\right)^2} \right) dK[1] + 1 \right]$$

✓ **Maple** : cpu = 0.104 (sec), leaf count = 32

$$\left\{ y(x) = \frac{4 \text{RootOf}\left(\int^{-Z} (F(_a))^{-1} d_a x + x_C1 + 1\right) x^2 - 1}{4 x^2} \right\}$$

2.582 ODE No. 582

$$y'(x) = \frac{ax^2 F\left(\frac{axy(x)+1}{ax}\right) + 1}{ax^2}$$

✓ **Mathematica** : cpu = 16.6528 (sec), leaf count = 139

$$\text{Solve} \left[\int_1^{y(x)} \frac{F\left(\frac{axK[2]+1}{ax}\right) \int_1^x \frac{F'\left(\frac{aK[1]K[2]+1}{aK[1]}\right)}{aK[1]^2 F\left(\frac{aK[1]K[2]+1}{aK[1]}\right)^2} dK[1] - 1}{F\left(\frac{axK[2]+1}{ax}\right)} dK[2] + \int_1^x \left(-\frac{1}{aK[1]^2 F\left(\frac{ay(x)K[1]+1}{aK[1]}\right)} - 1 \right) \right]$$

✓ **Maple** : cpu = 0.237 (sec), leaf count = 30

$$\left\{ y(x) = \frac{\text{RootOf}\left(-x + \int^{-Z} (F(_a))^{-1} d_a + _C1\right) xa - 1}{ax} \right\}$$

2.583 ODE No. 583

$$y'(x) = -\frac{1}{2}x \left(ax^2 - 2F\left(\frac{ax^4}{8} + y(x)\right) \right)$$

✓ **Mathematica** : cpu = 41.0531 (sec), leaf count = 123

$$\text{Solve} \left[\int_1^{y(x)} \frac{F\left(K[2] + \frac{ax^4}{8}\right) \int_1^x \frac{aK[1]^3 F'\left(\frac{1}{8}aK[1]^4 + K[2]\right)}{2F\left(\frac{1}{8}aK[1]^4 + K[2]\right)^2} dK[1] + 1}{F\left(K[2] + \frac{ax^4}{8}\right)} dK[2] + \int_1^x \left(K[1] - \frac{aK[1]^3}{2F\left(\frac{1}{8}aK[1]^4 + y(x)\right)} \right) \right]$$

✓ **Maple** : cpu = 0.145 (sec), leaf count = 31

$$\left\{ y(x) = -\frac{ax^4}{8} + \text{RootOf}\left(-x^2 + 2 \int^{-Z} (F(_a))^{-1} d_a + 2_C1\right) \right\}$$

2.584 ODE No. 584

$$y'(x) = \frac{2a}{2aF(y(x)^2 - 4ax) + y(x)}$$

✓ **Mathematica** : cpu = 18.9657 (sec), leaf count = 112

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{K[2]}{4a^2 F(K[2]^2 - 4ax)} - \frac{2a \int_1^x \frac{K[2] F'(K[2]^2 - 4aK[1])}{a F(K[2]^2 - 4aK[1])^2} dK[1] - 1}{2a} \right) dK[2] + \int_1^x -\frac{1}{2a F(y(x)^2 - 4ax)} dx \right]$$

✓ **Maple** : cpu = 0.067 (sec), leaf count = 35

$$\left\{ \frac{y(x)}{2a} + \frac{\int^{(y(x))^2 - 4ax} (F(_a))^{-1} d_a}{8a^2} - _C1 = 0 \right\}$$

2.585 ODE No. 585

$$y'(x) = y(x)F(\log(\log(y(x))) - \log(x))$$

✓ **Mathematica** : cpu = 122.928 (sec), leaf count = 202

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{1}{K[2](xF(\log(\log(K[2])) - \log(x)) - \log(K[2]))} - \int_1^x \left(\frac{F(\log(\log(K[2])) - \log(K[1]))}{(K[1]F(\log(\log(K[2])) - \log(K[1]))} \right) dK[1] \right) dK[2] \right]$$

✓ **Maple** : cpu = 0.47 (sec), leaf count = 168

$$\left\{ \int_{_b}^x \frac{F(\ln(\ln(y(x))) - \ln(_a))}{_a F(\ln(\ln(y(x))) - \ln(_a)) - \ln(y(x))} d_a + \int^{y(x)} -\frac{1}{_f (xF(\ln(\ln(_f)) - \ln(x)) - \ln(_f))} d_f \right\}$$

2.586 ODE No. 586

$$y'(x) = \frac{x F\left(\frac{y(x)}{\sqrt{x^2+1}}\right)}{\sqrt{x^2+1}}$$

✓ **Mathematica** : cpu = 157. (sec), leaf count = 972

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{\sqrt{x^2+1} F\left(\frac{K[2]}{\sqrt{x^2+1}}\right)}{-x^2 F\left(\frac{K[2]}{\sqrt{x^2+1}}\right)^2 - F\left(\frac{K[2]}{\sqrt{x^2+1}}\right)^2 + K[2]^2} - \int_1^x \left(\frac{K[1] \sqrt{K[1]^2+1} \left(\frac{2F\left(\frac{K[2]}{\sqrt{K[1]^2+1}}\right) F'\left(\frac{K[2]}{\sqrt{K[1]^2+1}}\right)}{\sqrt{K[1]^2+1}} \right)}{K[2] \left(K[1]^2 F\left(\frac{K[2]}{\sqrt{K[1]^2+1}}\right) \right)} \right) \right]$$

✓ **Maple** : cpu = 0.276 (sec), leaf count = 39

$$\left\{ y(x) = \text{RootOf} \left(-\ln(x^2+1) + 2 \int^{-Z} (F(_a) - _a)^{-1} d_a + 2_C1 \right) \sqrt{x^2+1} \right\}$$

2.587 ODE No. 587

$$y'(x) = \frac{1}{2} \sqrt{x} \left(2F\left(y(x) - \frac{x^3}{6}\right) + x^{3/2} \right)$$

✓ **Mathematica** : cpu = 251.729 (sec), leaf count = 120

$$\text{Solve} \left[\int_1^{y(x)} \frac{F\left(K[2] - \frac{x^3}{6}\right) \int_1^x \frac{K[1]^2 F'\left(K[2] - \frac{K[1]^3}{6}\right)}{2F\left(K[2] - \frac{K[1]^3}{6}\right)^2} dK[1] + 1}{F\left(K[2] - \frac{x^3}{6}\right)} dK[2] + \int_1^x \left(\frac{K[1]^2}{2F\left(y(x) - \frac{K[1]^3}{6}\right)} + \sqrt{K[1]} \right) \right]$$

✓ **Maple** : cpu = 0.144 (sec), leaf count = 29

$$\left\{ \int_{-b}^{y(x)} \left(F\left(-a - \frac{x^3}{6}\right) \right)^{-1} d_a - \frac{2}{3} x^{3/2} - _C1 = 0 \right\}$$

2.588 ODE No. 588

$$y'(x) = \frac{F(-(x - y(x))(y(x) + x)) + x}{y(x)}$$

✓ **Mathematica** : cpu = 30.2909 (sec), leaf count = 110

$$\text{Solve} \left[\int_1^{y(x)} \left(- \int_1^x - \frac{2K[1]K[2]F'(-(K[1] - K[2])(K[1] + K[2]))}{F(-(K[1] - K[2])(K[1] + K[2]))^2} dK[1] - \frac{K[2]}{F(-(x - K[2])(K[2] + x))} \right) \right]$$

✓ **Maple** : cpu = 0.13 (sec), leaf count = 53

$$\left\{ y(x) = \sqrt{x^2 + \text{RootOf} \left(-2x + \int^{-Z} (F(_a))^{-1} d_a + 2_C1 \right)}, y(x) = -\sqrt{x^2 + \text{RootOf} \left(-2x + \int^{-Z} (F(_a))^{-1} d_a + 2_C1 \right)} \right\}$$

2.589 ODE No. 589

$$y'(x) = \frac{y(x)^2 F\left(\frac{1-y(x)\log(x)}{y(x)}\right)}{x}$$

✓ **Mathematica** : cpu = 19.2086 (sec), leaf count = 242

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{1}{K[2]^2 \left(-F\left(\frac{1-\log(x)K[2]}{K[2]} - 1\right) \right)} - \int_1^x \left(\frac{\left(-\frac{\log(K[1])}{K[2]} - \frac{1-K[2]\log(K[1])}{K[2]^2} \right) F'\left(\frac{1-K[2]\log(K[1])}{K[2]} - 1\right)}{K[1] \left(F\left(\frac{1-K[2]\log(K[1])}{K[2]} - 1\right) + 1 \right)} \right) \right]$$

✓ **Maple** : cpu = 0.155 (sec), leaf count = 38

$$\left\{ \int_{-b}^{y(x)} \frac{1}{-a^2} \left(F\left(\frac{1 - _a \ln(x)}{-a}\right) + 1 \right)^{-1} d_a - \ln(x) - _C1 = 0 \right\}$$

2.590 ODE No. 590

$$y'(x) = \frac{x}{F(x^2 + y(x)^2) - y(x)}$$

✓ **Mathematica** : cpu = 30.4114 (sec), leaf count = 91

$$\text{Solve} \left[\int_1^{y(x)} \left(- \int_1^x \frac{2K[1]K[2]F'(K[1]^2 + K[2]^2)}{F(K[1]^2 + K[2]^2)^2} dK[1] - \frac{K[2]}{F(K[2]^2 + x^2)} + 1 \right) dK[2] + \int_1^x -\frac{K[1]}{F(K[1]^2 + y(x)^2)} dK[1] \right]$$

✓ **Maple** : cpu = 0.15 (sec), leaf count = 28

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

2.591 ODE No. 591

$$y'(x) = \frac{x F\left(\frac{ay(x)^2+bx^2}{a}\right)}{\sqrt{ay(x)}}$$

✓ **Mathematica** : cpu = 18.6491 (sec), leaf count = 250

$$\text{Solve} \left[\int_1^{y(x)} \left(- \int_1^x \left(\frac{2bK[1]K[2]F'\left(\frac{aK[2]^2+bK[1]^2}{a}\right)}{\sqrt{a}\left(\sqrt{a}F\left(\frac{aK[2]^2+bK[1]^2}{a}\right) + b\right)} - \frac{2bK[1]K[2]F\left(\frac{aK[2]^2+bK[1]^2}{a}\right)F'\left(\frac{aK[2]^2+bK[1]^2}{a}\right)}{\left(\sqrt{a}F\left(\frac{aK[2]^2+bK[1]^2}{a}\right) + b\right)^2} \right) dK[2] + \int_1^x -\frac{K[1]}{F(K[1]^2 + y(x)^2)} dK[1] \right)$$

✓ **Maple** : cpu = 0.197 (sec), leaf count = 108

$$\left\{ y(x) = \frac{1}{a} \sqrt{a \left(-bx^2 + \text{RootOf} \left(\int^{-Z} (b\sqrt{a} + F(_a) a)^{-1} d_a b a^{\frac{3}{2}} - bx^2 + 2 _C1 a \right) a \right)}, y(x) = -\frac{1}{a} \sqrt{a \left(-bx^2 + \text{RootOf} \left(\int^{-Z} (b\sqrt{a} + F(_a) a)^{-1} d_a b a^{\frac{3}{2}} - bx^2 + 2 _C1 a \right) a \right)} \right\}$$

2.592 ODE No. 592

$$y'(x) = \frac{F\left(-\frac{2x^3}{5} + y(x) - 2\sqrt{x}\right) + \frac{6x^3}{5} + \sqrt{x}}{x}$$

✗ **Mathematica** : cpu = 300. (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.206 (sec), leaf count = 33

$$\left\{ \int_{-b}^{y(x)} \left(F\left(-a - \frac{2x^3}{5} - 2\sqrt{x}\right) \right)^{-1} d_a - \ln(x) - C1 = 0 \right\}$$

2.593 ODE No. 593

$$y'(x) = \frac{e^x F(y(x)^{3/2} - \frac{3e^x}{2})}{\sqrt{y(x)}}$$

✓ **Mathematica** : cpu = 36.7499 (sec), leaf count = 218

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{\sqrt{K[2]}}{F(K[2]^{3/2} - \frac{3e^x}{2}) - 1} - \int_1^x \left(\frac{3e^{K[1]} \sqrt{K[2]} F(K[2]^{3/2} - \frac{3e^{K[1]}}{2}) F'(K[2]^{3/2} - \frac{3e^{K[1]}}{2})}{2 \left(F(K[2]^{3/2} - \frac{3e^{K[1]}}{2}) - 1 \right)^2} - 3e^{K[1]} \right) \right) \right]$$

✓ **Maple** : cpu = 0.365 (sec), leaf count = 35

$$\left\{ \int_{-b}^{y(x)} 1 \sqrt{-a} \left(F\left(-a^{\frac{3}{2}} - \frac{3e^x}{2}\right) - 1 \right)^{-1} d_a - e^x - C1 = 0 \right\}$$

2.594 ODE No. 594

$$y'(x) = \frac{x F\left(\frac{y(x)^2 - b}{x^2}\right)}{y(x)}$$

✓ **Mathematica** : cpu = 18.0583 (sec), leaf count = 233

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

✓ **Maple** : cpu = 0.151 (sec), leaf count = 67

$$\left\{ y(x) = \sqrt{\text{RootOf}\left(-2 \ln(x) + \int^{-Z} (F(_a) - _a)^{-1} d_a + 2_C1\right) x^2 + b}, y(x) = -\sqrt{\text{RootOf}\left(-2 \ln(x) + \int^{-Z} (F(_a) - _a)^{-1} d_a + 2_C1\right) x^2 + b} \right.$$

2.595 ODE No. 595

$$y'(x) = \frac{F\left(\frac{xy(x)^2+1}{x}\right)}{x^2y(x)}$$

✓ **Mathematica** : cpu = 18.836 (sec), leaf count = 201

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{K[2]}{2F\left(\frac{xK[2]^2+1}{x}\right) - 1} - \int_1^x \left(\frac{4K[2]F\left(\frac{K[1]K[2]^2+1}{K[1]}\right) F'\left(\frac{K[1]K[2]^2+1}{K[1]}\right)}{K[1]^2 \left(2F\left(\frac{K[1]K[2]^2+1}{K[1]}\right) - 1\right)^2} - \frac{2K[2]F'\left(\frac{K[1]K[2]^2+1}{K[1]}\right)}{K[1]^2 \left(2F\left(\frac{K[1]K[2]^2+1}{K[1]}\right) - 1\right)} \right) dx \right]$$

✓ **Maple** : cpu = 0.143 (sec), leaf count = 72

$$\left\{ y(x) = \frac{1}{x} \sqrt{x \left(\text{RootOf}\left(\int^{-Z} (-1 + 2F(_a))^{-1} d_a x + x_C1 + 1\right) x - 1\right)}, y(x) = -\frac{1}{x} \sqrt{x \left(\text{RootOf}\left(\int^{-Z} (-1 + 2F(_a))^{-1} d_a x + x_C1 + 1\right) x - 1\right)} \right.$$

2.596 ODE No. 596

$$y'(x) = \frac{F(x^2 + y(x) - x) - 2x^2 + x}{x}$$

✓ **Mathematica** : cpu = 227.775 (sec), leaf count = 153

$$\text{Solve} \left[\int_1^{y(x)} -\frac{F(K[2] + x^2 - x) \int_1^x \left(\frac{2K[1]F'(K[1]^2 - K[1] + K[2])}{F(K[1]^2 - K[1] + K[2])^2} - \frac{F'(K[1]^2 - K[1] + K[2])}{F(K[1]^2 - K[1] + K[2])^2} \right) dK[1] + 1}{F(K[2] + x^2 - x)} dK[2] + \int_1^x \dots \right]$$

✓ **Maple** : cpu = 0.103 (sec), leaf count = 26

$$\left\{ y(x) = -x^2 + \text{RootOf}\left(-\ln(x) + \int^{-Z} (F(_a))^{-1} d_a + _C1\right) + x \right\}$$

2.597 ODE No. 597

$$y'(x) = \frac{2a}{x^2 \left(2aF\left(\frac{xy(x)^2 - 4a}{x}\right) - y(x) \right)}$$

✓ **Mathematica** : cpu = 24.2711 (sec), leaf count = 127

$$\text{Solve} \left[\int_1^{y(x)} \left(- \int_1^x \frac{2K[2]F'\left(\frac{K[1]K[2]^2 - 4a}{K[1]}\right)}{K[1]^2 F\left(\frac{K[1]K[2]^2 - 4a}{K[1]}\right)} dK[1] - \frac{K[2]}{2aF\left(\frac{xK[2]^2 - 4a}{x}\right)} + 1 \right) dK[2] + \int_1^x - \frac{1}{K[1]^2 F\left(\frac{y(x)^2 - 4a}{x}\right)} dx \right]$$

✓ **Maple** : cpu = 0.418 (sec), leaf count = 37

$$\left\{ -\frac{y(x)}{2a} + \frac{1}{8a^2} \int^{(y(x))^2 - 4\frac{a}{x}} (F(_a))^{-1} d_a - _C1 = 0 \right\}$$

2.598 ODE No. 598

$$y'(x) = \frac{F\left(\frac{y(x)}{x}\right) + y(x)}{x - 1}$$

✓ **Mathematica** : cpu = 0.07274 (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 = 0.027 (sec), leaf count = 29

$$\left\{ y(x) = \text{RootOf} \left(- \int^{-Z} (F(_a) + _a)^{-1} d_a - \ln(x) + \ln(x - 1) + _C1 \right) x \right\}$$

2.599 ODE No. 599

$$y'(x) = \frac{F(x^2 + y(x)^2) - x}{y(x)}$$

✓ **Mathematica** : cpu = 21.3054 (sec), leaf count = 92

$$\text{Solve} \left[\int_1^{y(x)} \left(- \int_1^x \frac{2K[1]K[2]F'(K[1]^2 + K[2]^2)}{F(K[1]^2 + K[2]^2)^2} dK[1] - \frac{K[2]}{F(K[2]^2 + x^2)} \right) dK[2] + \int_1^x \left(1 - \frac{K[1]}{F(K[1]^2 + x^2)} \right) dx \right]$$

✓ **Maple** : cpu = 0.106 (sec), leaf count = 57

$$\left\{ y(x) = \sqrt{-x^2 + \text{RootOf} \left(-2x + \int^{-Z} (F(_a))^{-1} d_a + 2_C1 \right)}, y(x) = -\sqrt{-x^2 + \text{RootOf} \left(-2x + \int^{-Z} (F(_a))^{-1} d_a + 2_C1 \right)} \right\}$$

2.600 ODE No. 600

$$y'(x) = \frac{y(x)^2 F\left(\frac{1-2y(x)\log(x)}{y(x)}\right)}{x}$$

✓ **Mathematica** : cpu = 22.2944 (sec), leaf count = 243

$$\text{Solve} \left[\int_1^{y(x)} \left(- \int_1^x \left(\frac{2 \left(-\frac{2\log(K[1])}{K[2]} - \frac{1-2K[2]\log(K[1])}{K[2]^2} \right) F' \left(\frac{1-2K[2]\log(K[1])}{K[2]} \right)}{K[1] \left(F \left(\frac{1-2K[2]\log(K[1])}{K[2]} \right) + 2 \right)} - \frac{2 \left(-\frac{2\log(K[1])}{K[2]} - \frac{1-2K[2]\log(K[1])}{K[2]^2} \right)}{K[1] \left(F \left(\frac{1-2K[2]\log(K[1])}{K[2]} \right) + 2 \right)} \right) dK[1] - \frac{2 \left(-\frac{2\log(K[1])}{K[2]} - \frac{1-2K[2]\log(K[1])}{K[2]^2} \right)}{K[1] \left(F \left(\frac{1-2K[2]\log(K[1])}{K[2]} \right) + 2 \right)} \right]$$

✓ **Maple** : cpu = 0.151 (sec), leaf count = 38

$$\left\{ \int_{-b}^{y(x)} \frac{1}{-a^2} \left(F \left(\frac{-2_a \ln(x) + 1}{-a} \right) + 2 \right)^{-1} d_a - \ln(x) - _C1 = 0 \right\}$$

2.601 ODE No. 601

$$y'(x) = \frac{x F(-(x - y(x))(y(x) + x))}{y(x)}$$

✓ **Mathematica** : cpu = 31.4255 (sec), leaf count = 187

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

✓ **Maple** : cpu = 0.145 (sec), leaf count = 61

$$\left\{ y(x) = \sqrt{x^2 + \text{RootOf} \left(-x^2 + \int^{-Z} (F(_a) - 1)^{-1} d_a + 2_C1 \right)}, y(x) = -\sqrt{x^2 + \text{RootOf} \left(-x^2 + \right)} \right.$$

2.602 ODE No. 602

$$y'(x) = \frac{y(x)^2 \left(x^2 F\left(\frac{x^2 - y(x)}{x^2 y(x)}\right) + 2 \right)}{x^3}$$

✓ **Mathematica** : cpu = 224.98 (sec), leaf count = 164

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

✓ **Maple** : cpu = 0.144 (sec), leaf count = 33

$$\left\{ y(x) = \frac{x^2}{\text{RootOf} \left(-\ln(x) - \int^{-Z} (F(_a))^{-1} d_a + _C1 \right) x^2 + 1} \right\}$$

2.603 ODE No. 603

$$y'(x) = \frac{2xF(y(x) + \log(2x + 1)) + F(y(x) + \log(2x + 1)) - 2}{2x + 1}$$

✓ **Mathematica** : cpu = 16.3718 (sec), leaf count = 114

$$\text{Solve} \left[\int_1^{y(x)} \frac{F(K[2] + \log(2x + 1)) \int_1^x -\frac{2F'(K[2] + \log(2K[1] + 1))}{(2K[1] + 1)F(K[2] + \log(2K[1] + 1))^2} dK[1] - 1}{F(K[2] + \log(2x + 1))} dK[2] + \int_1^x \left(\frac{1}{(2K[1] + 1)} \right) dK[1] \right]$$

✓ **Maple** : cpu = 0.151 (sec), leaf count = 27

$$\left\{ y(x) = -\ln(2x + 1) + \text{RootOf} \left(-x + \int^{-Z} (F(_a))^{-1} d_a + _C1 \right) \right\}$$

2.604 ODE No. 604

$$y'(x) = \frac{2y(x)^3}{2y(x)F\left(\frac{4xy(x)^2+1}{y(x)^2}\right) + 1}$$

✓ **Mathematica** : cpu = 22.3035 (sec), leaf count = 140

$$\text{Solve} \left[\int_1^{y(x)} \left(-\int_1^x \frac{\left(\frac{8K[1]}{K[2]} - \frac{2(4K[1]K[2]^2+1)}{K[2]^3} \right) F' \left(\frac{4K[1]K[2]^2+1}{K[2]^2} \right)}{F \left(\frac{4K[1]K[2]^2+1}{K[2]^2} \right)^2} dK[1] + \frac{1}{2K[2]^3 F \left(\frac{4xK[2]^2+1}{K[2]^2} \right)} + \frac{1}{K[2]^2} \right) dK[2] \right]$$

✓ **Maple** : cpu = 0.166 (sec), leaf count = 30

$$\left\{ -_C1 - (y(x))^{-1} - \frac{\int^{4x+(y(x))^{-2}} (F(_a))^{-1} d_a}{4} = 0 \right\}$$

2.605 ODE No. 605

$$y'(x) = -\frac{y(x)^2 \left(2x - F\left(\frac{1-\frac{1}{2}xy(x)}{y(x)}\right)\right)}{4x}$$

✓ **Mathematica** : cpu = 206.753 (sec), leaf count = 142

$$\text{Solve} \left[\int_1^{y(x)} \left(- \int_1^x \frac{2 \left(-\frac{K[1]}{2K[2]} - \frac{1-\frac{1}{2}K[1]K[2]}{K[2]^2} \right) F' \left(\frac{1-\frac{1}{2}K[1]K[2]}{K[2]} \right)}{F \left(\frac{1-\frac{1}{2}K[1]K[2]}{K[2]} \right)^2} dK[1] - \frac{4}{K[2]^2 F \left(\frac{1-\frac{1}{2}xK[2]}{K[2]} \right)} \right) dK[2] + \int_1^{x^2} \right]$$

✓ **Maple** : cpu = 0.139 (sec), leaf count = 29

$$\left\{ y(x) = 2 \left(2 \text{RootOf} \left(-\ln(x) - 4 \int^{-Z} (F(_a))^{-1} d_a + _C1 \right) + x \right)^{-1} \right\}$$

2.606 ODE No. 606

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

✓ **Mathematica** : cpu = 61.6159 (sec), leaf count = 358

$$\text{Solve} \left[\int_1^{y(x)} \frac{F \left(K[2] - \frac{1}{2}e^{-x^2}x^2 \right) \int_1^x \left(\frac{e^{-K[1]^2}K[1]^3 F' \left(K[2] - \frac{1}{2}e^{-K[1]^2}K[1]^2 \right)}{F \left(K[2] - \frac{1}{2}e^{-K[1]^2}K[1]^2 \right)^2} - \frac{e^{-K[1]^2}K[1] \left(e^{K[1]^2} F \left(K[2] - \frac{1}{2}e^{-K[1]^2}K[1]^2 \right) \right)}{F \left(K[2] - \frac{1}{2}e^{-K[1]^2}K[1]^2 \right)} \right) dK[1]}{F \left(K[2] - \frac{1}{2}e^{-x^2}x^2 \right)} dK[2] \right]$$

✓ **Maple** : cpu = 0.959 (sec), leaf count = 34

$$\left\{ y(x) = \frac{x^2 e^{-x^2}}{2} + \text{RootOf} \left(x^2 - 2 \int^{-Z} (F(_a))^{-1} d_a + 2_C1 \right) \right\}$$

2.607 ODE No. 607

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

✗ **Mathematica** : cpu = 299.999 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.103 (sec), leaf count = 22

$$\left\{ y(x) = \text{RootOf}\left(-x + \int^{-Z} (F(_a))^{-1} d_a + _C1\right) x^2 \right\}$$

2.608 ODE No. 608

$$y'(x) = \frac{\sqrt{y(x)}}{F\left(\frac{x-y(x)}{\sqrt{y(x)}}\right) + \sqrt{y(x)}}$$

✓ **Mathematica** : cpu = 298.623 (sec), leaf count = 271

$$\text{Solve}\left[\int_1^{y(x)} \left(-\int_1^x \frac{-2\left(-\frac{K[1]-K[2]}{2K[2]^{3/2}} - \frac{1}{\sqrt{K[2]}}\right) \sqrt{K[2]} F'\left(\frac{K[1]-K[2]}{\sqrt{K[2]}}\right) - \frac{F\left(\frac{K[1]-K[2]}{\sqrt{K[2]}}\right)}{\sqrt{K[2]}} - 1}{\left(-2\sqrt{K[2]} F\left(\frac{K[1]-K[2]}{\sqrt{K[2]}}\right) + K[1] - K[2]\right)^2} dK[1] - \frac{F\left(\frac{x-K[1]}{\sqrt{K[2]}}\right)}{x\sqrt{K[2]}}\right] dK[1] - \frac{F\left(\frac{x-K[1]}{\sqrt{K[2]}}\right)}{x\sqrt{K[2]}}\right]$$

✓ **Maple** : cpu = 0.153 (sec), leaf count = 40

$$\left\{ \frac{\ln(y(x))}{2} - \int^{x-\frac{1}{\sqrt{y(x)}}-\sqrt{y(x)}} (2F(_a) - _a)^{-1} d_a - _C1 = 0 \right\}$$

2.609 ODE No. 609

$$y'(x) = \frac{F(x^3 y(x)) - 3x^2 y(x)}{x^3}$$

✓ **Mathematica** : cpu = 48.9784 (sec), leaf count = 114

$$\text{Solve} \left[\int_1^{y(x)} - \frac{F(x^3 K[2]) \int_1^x \left(\frac{3K[1]^5 K[2] F'(K[1]^3 K[2])}{F(K[1]^3 K[2])^2} - \frac{3K[1]^2}{F(K[1]^3 K[2])} \right) dK[1] + x^3}{F(x^3 K[2])} dK[2] + \int_1^x \left(1 - \frac{3y(x)K}{F(y(x)K)} \right) dK \right]$$

✓ **Maple** : cpu = 0.163 (sec), leaf count = 22

$$\left\{ y(x) = \frac{\text{RootOf} \left(x - \int^{-Z} (F(_a))^{-1} d_a + _C1 \right)}{x^3} \right\}$$

2.610 ODE No. 610

$$y'(x) = \frac{x^2 F\left(\frac{y(x)}{x}\right) + y(x)}{x}$$

✓ **Mathematica** : cpu = 0.0587308 (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 = 0.015 (sec), leaf count = 20

$$\left\{ y(x) = \text{RootOf} \left(x - \int^{-Z} (F(_a))^{-1} d_a + _C1 \right) x \right\}$$

2.611 ODE No. 611

$$y'(x) = \frac{F(x(y(x) + x)) - y(x) - 2x}{x}$$

✓ **Mathematica** : cpu = 38.0269 (sec), leaf count = 188

$$\text{Solve} \left[\int_1^{y(x)} \frac{F(x(K[2] + x)) \int_1^x \left(\frac{2K[1]^2 F'(K[1](K[1]+K[2]))}{F(K[1](K[1]+K[2]))^2} + \frac{K[1](K[2]-F(K[1](K[1]+K[2]))F'(K[1](K[1]+K[2]))}{F(K[1](K[1]+K[2]))^2} \right) dK[1] - 1}{F(x(K[2] + x))} \right]$$

✓ **Maple** : cpu = 0.095 (sec), leaf count = 28

$$\left\{ y(x) = \frac{-x^2 + \text{RootOf}\left(-x + \int^{-Z} (F(_a))^{-1} d_a + _C1\right)}{x} \right\}$$

2.612 ODE No. 612

$$y'(x) = \frac{1}{2} e^{\frac{x^2}{4}} \left(2F\left(e^{-\frac{x^2}{4}} y(x)\right) + e^{-\frac{x^2}{4}} xy(x) \right)$$

✓ **Mathematica** : cpu = 46.0503 (sec), leaf count = 196

$$\text{Solve} \left[\int_1^{y(x)} \frac{e^{-\frac{x^2}{4}} \left(e^{\frac{x^2}{4}} F\left(e^{-\frac{x^2}{4}} K[2]\right) \int_1^x \left(\frac{e^{-\frac{1}{4}K[1]^2} K[1]}{2F\left(e^{-\frac{1}{4}K[1]^2} K[2]\right)} - \frac{e^{-\frac{1}{2}K[1]^2} K[1]K[2]F'\left(e^{-\frac{1}{4}K[1]^2} K[2]\right)}{2F\left(e^{-\frac{1}{4}K[1]^2} K[2]\right)^2} \right) dK[1] + 1}{F\left(e^{-\frac{x^2}{4}} K[2]\right)} \right]$$

✓ **Maple** : cpu = 0.152 (sec), leaf count = 27

$$\left\{ y(x) = \text{RootOf}\left(-x + \int^{-Z} (F(_a))^{-1} d_a + _C1\right) \left(e^{-\frac{x^2}{4}}\right)^{-1} \right\}$$

2.613 ODE No. 613

$$y'(x) = \frac{x^2 F\left(\frac{y(x)-x \log(x)}{x}\right) + y(x) + x}{x}$$

✗ **Mathematica** : cpu = 299.999 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.112 (sec), leaf count = 23

$$\left\{ y(x) = \left(\ln(x) + \text{RootOf}\left(-x + \int^{-Z} (F(_a))^{-1} d_a + _C1\right) \right) x \right\}$$

2.614 ODE No. 614

$$y'(x) = \frac{(a-1)(a+1)x}{a^2 F\left(-\frac{1}{2}a^2 x^2 + \frac{x^2}{2} + \frac{y(x)^2}{2}\right) - F\left(-\frac{1}{2}a^2 x^2 + \frac{x^2}{2} + \frac{y(x)^2}{2}\right) + y(x)}$$

✓ **Mathematica** : cpu = 68.1358 (sec), leaf count = 174

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

✓ **Maple** : cpu = 0.449 (sec), leaf count = 59

$$\left\{ \frac{y(x)}{(a-1)(a+1)} + \frac{1}{2a^4 - 4a^2 + 2} \int^{-a^2 x^2 + x^2 + (y(x))^2} \left(F\left(\frac{-a}{2}\right)\right)^{-1} d_a - _C1 = 0 \right\}$$

2.615 ODE No. 615

$$y'(x) = \frac{y(x)}{x(y(x)F(xy(x)) - 1)}$$

✓ **Mathematica** : cpu = 15.6083 (sec), leaf count = 74

$$\text{Solve} \left[\int_1^{y(x)} \left(- \int_1^x \frac{F'(K[1]K[2])}{F(K[1]K[2])^2} dK[1] - \frac{1}{K[2]F(xK[2])} + 1 \right) dK[2] + \int_1^x -\frac{1}{K[1]F(y(x)K[1])} dK[1] \right]$$

✓ **Maple** : cpu = 0.139 (sec), leaf count = 26

$$\left\{ -y(x) + \int^{xy(x)} \frac{1}{F(-a)_a} d_a - C1 = 0 \right\}$$

2.616 ODE No. 616

$$y'(x) = \frac{F(xy(x) - 1) - 2x^3y(x) + x^2}{x^4}$$

✓ **Mathematica** : cpu = 45.5148 (sec), leaf count = 174

$$\text{Solve} \left[\int_1^{y(x)} - \frac{F(x(xK[2] - 1)) \int_1^x \left(\frac{2K[2]K[1]^3 F'(K[1](K[1]K[2]-1))}{F(K[1](K[1]K[2]-1))^2} - \frac{K[1]^2 F'(K[1](K[1]K[2]-1))}{F(K[1](K[1]K[2]-1))^2} - \frac{2K[1]}{F(K[1](K[1]K[2]-1))} \right)}{F(x(xK[2] - 1))} \right]$$

✓ **Maple** : cpu = 0.1 (sec), leaf count = 26

$$\left\{ y(x) = \frac{\text{RootOf} \left(\int^{-Z} (F(-a))^{-1} d_a x + x C1 + 1 \right) + x}{x^2} \right\}$$

2.617 ODE No. 617

$$y'(x) = \frac{1}{9} e^{-\frac{3x^2}{2}} xy(x)^2 F \left(\frac{e^{\frac{3x^2}{2}} (y(x) + 3)}{3y(x)} \right)$$

✓ **Mathematica** : cpu = 258.618 (sec), leaf count = 612

$$\text{Solve} \left[\int_1^{y(x)} \left(- \int_1^x \left(\frac{K[2] \left(\frac{3K[1]^2}{3K[2]} - \frac{3K[1]^2 (K[2]+3)}{3K[2]^2} \right) K[1] F' \left(\frac{e^{\frac{3K[1]^2}{3K[2]} (K[2]+3)}}{3K[2]} \right)}{K[2] F \left(\frac{e^{\frac{3K[1]^2}{3K[2]} (K[2]+3)}}{3K[2]} \right)} - 9e^{\frac{3K[1]^2}{2}} K[2] - 27e^{\frac{3K[1]^2}{2}} \right) + \frac{K[2]K[1]F \left(\frac{e^{\frac{3K[1]^2}{3K[2]} (K[2]+3)}}{3K[2]} \right)}{F(x(xK[2] - 1))} \right]$$

✓ **Maple** : cpu = 0.306 (sec), leaf count = 47

$$\left\{ y(x) = -3 \frac{e^{3/2 x^2}}{e^{3/2 x^2} - 3 \text{RootOf} \left(-x^2 - 18 \int^{-Z} (F(-a) - 27_a)^{-1} d_a + 2_C1 \right)} \right\}$$

2.618 ODE No. 618

$$y'(x) = \frac{(y(x) + 1)(x(y(x) - \log(y(x) + 1) - \log(x)) + 1)}{xy(x)}$$

✓ **Mathematica** : cpu = 0.114927 (sec), leaf count = 25

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

✓ **Maple** : cpu = 0.358 (sec), leaf count = 34

$$\left\{ y(x) = \frac{1}{x} \left(e^{-\text{lambertW}\left(-\frac{e^{-C1 e^x - 1}}{x}\right) + C1 e^x - 1} - x \right) \right\}$$

2.619 ODE No. 619

$$y'(x) = \frac{6y(x)}{-F\left(-\frac{1}{3}y(x)^4 - \frac{y(x)^3}{2} - y(x)^2 - y(x) + x\right) + 8y(x)^4 + 9y(x)^3 + 12y(x)^2 + 6y(x)}$$

✓ **Mathematica** : cpu = 248.478 (sec), leaf count = 327

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{F\left(-\frac{1}{3}K[2]^4 - \frac{K[2]^3}{2} - K[2]^2 - K[2] + x\right) \int_1^x -\frac{6\left(-\frac{4}{3}K[2]^3 - \frac{3K[2]^2}{2} - 2K[2] - 1\right)F'\left(-\frac{1}{3}K[2]^4 - \frac{K[2]^3}{2} - K[2]^2 - K[2] + x\right)}{F\left(-\frac{1}{3}K[2]^4 - \frac{K[2]^3}{2} - K[2]^2 - K[2] + x\right)} dx - \frac{F\left(-\frac{1}{3}K[2]^4 - \frac{K[2]^3}{2} - K[2]^2 - K[2] + x\right)}{F\left(-\frac{1}{3}K[2]^4 - \frac{K[2]^3}{2} - K[2]^2 - K[2] + x\right)} \right) dx \right]$$

✓ **Maple** : cpu = 0.487 (sec), leaf count = 81

$$\left\{ \int_{-b}^{y(x)} \frac{1}{-a} \left(-8_{-a^4} - 9_{-a^3} - 12_{-a^2} + F\left(-\frac{a^4}{3} - \frac{a^3}{2} - a^2 - a + x\right) - 6_{-a} \right) \left(F\left(-\frac{a^4}{3} - \frac{a^3}{2} - a^2 - a + x\right) \right) dx \right\}$$

2.620 ODE No. 620

$$y'(x) = \frac{e^{2F(-(x-y(x))(y(x)+x))} + x^2 + 2xy(x) + y(x)^2}{-e^{2F(-(x-y(x))(y(x)+x))} + x^2 + 2xy(x) + y(x)^2}$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out
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✓ **Maple** : cpu = 0.195 (sec), leaf count = 37

$$\left\{ y(x) = e^{\text{RootOf}\left(-_Z + f(e^{-Z})^2 - 2e^{-Z}x(e^{2F(-a)} + a)^{-1}d_{-a} - C1\right)} - x \right\}$$

2.621 ODE No. 621

$$y'(x) = \frac{1}{y(x) + \sqrt{x}}$$

✓ **Mathematica** : cpu = 0.0846031 (sec), leaf count = 445

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{\text{Root}\left[\#1^6(16e^{12c_1} + 16x^3) - 24\#1^4x^2 + 8\#1^3x^{3/2} + 9\#1^2x - 6\#1\sqrt{x} + 1\&, 1\right]} - \sqrt{x} \right\}, \left\{ y \right.$$

✓ **Maple** : cpu = 0.264 (sec), leaf count = 59

$$\left\{ y(x) = 1 \left(\sqrt{x} \left(\text{RootOf}(-_Z^{18} - C1 - 9x_Z^6 - 6\sqrt{x}_Z^3 - 1) \right)^3 + 1 \right) \left(\text{RootOf}(-_Z^{18} - C1 - 9x_Z^6 - 6\sqrt{x}_Z^3 - 1) \right) \right.$$

2.622 ODE No. 622

$$y'(x) = \frac{1}{y(x) + \sqrt{3x+1} + 2}$$

✓ **Mathematica** : cpu = 0.385067 (sec), leaf count = 134

$$\text{Solve} \left[44c_1 + 6\sqrt{33} \tanh^{-1} \left(\frac{3y(x) + 7\sqrt{3x+1} + 6}{\sqrt{33}(y(x) + \sqrt{3x+1} + 2)} \right) = 33 \left(\log \left((y(x) + \sqrt{3x+1} + 2)^2 \left(\frac{1}{(y(x) + \sqrt{3x+1} + 2)} \right) \right) \right) \right.$$

✓ **Maple** : cpu = 0.209 (sec), leaf count = 83

$$\left\{ \ln \left(3\sqrt{3x+1}y(x) + 3(y(x))^2 + 6\sqrt{3x+1} - 6x + 12y(x) + 10 \right) - 6 \frac{\sqrt{3x+1}}{\sqrt{99x+33}} \text{Artanh} \left(\frac{3\sqrt{3x+1} - y(x)}{\sqrt{99x+33}} \right) \right.$$

2.623 ODE No. 623

$$y'(x) = \frac{x^2}{x^{3/2} + y(x)}$$

✓ **Mathematica** : cpu = 0.15438 (sec), leaf count = 77

$$\text{Solve} \left[44c_1 + 6\sqrt{33} \tanh^{-1} \left(\frac{7x^{3/2} + 3y(x)}{\sqrt{33}(x^{3/2} + y(x))} \right) = 33 \left(\log \left(-\frac{3y(x)}{2x^{3/2}} - \frac{3y(x)^2}{2x^3} + 1 \right) + 3 \log(x) \right), y(x) \right]$$

✓ **Maple** : cpu = 0.199 (sec), leaf count = 51

$$\left\{ \ln(3x^{3/2}y(x) - 2x^3 + 3(y(x))^2) - \frac{2\sqrt{33}}{11} \text{Artanh} \left(\frac{\sqrt{33}}{33} (3x^{3/2} + 6y(x)) x^{-3/2} \right) - C1 = 0 \right\}$$

2.624 ODE No. 624

$$y'(x) = \frac{x^{5/3}}{x^{4/3} + y(x)}$$

✓ **Mathematica** : cpu = 48.9047 (sec), leaf count = 9837

✓ **Maple** : cpu = 1.188 (sec), leaf count = 46

$$\left\{ y(x) = \frac{1}{2} \left(\text{RootOf}(-Z^{192} + 12x^{4/3}Z^{176} + 48x^{8/3}Z^{160} + 64x^4Z^{144} - C1) \right)^{16} + \frac{1}{2}x^{4/3} \right\}$$

2.625 ODE No. 625

$$y'(x) = \frac{1}{2}ix^2(-2\sqrt{6y(x) - x^3} + i)$$

✓ **Mathematica** : cpu = 0.196218 (sec), leaf count = 76

$$\text{Solve} \left[-y(x) + \frac{1}{12} \left(2i\sqrt{6y(x) - x^3} - \log(-x^3 + 6y(x) + 1) - 2i \tan^{-1} \left(\sqrt{6y(x) - x^3} \right) - 2x^3 + 12y(x) \right) \right]$$

✓ **Maple** : cpu = 0.227 (sec), leaf count = 55

$$\left\{ -2i\sqrt{-x^3 + 6y(x)} + 2i \arctan \left(\sqrt{-x^3 + 6y(x)} \right) + \ln(-x^3 + 6y(x) + 1) + 2x^3 - _C1 = 0 \right\}$$

2.626 ODE No. 626

$$y'(x) = \frac{x}{\sqrt{x^2 + 1} + y(x)}$$

✓ **Mathematica** : cpu = 0.180062 (sec), leaf count = 104

$$\text{Solve} \left[\frac{1}{2} \left(\log \left(\frac{-\sqrt{x^2 + 1}y(x)^2 - (x^2 + 1)y(x) + (x^2 + 1)^{3/2}}{(x^2 + 1)^{3/2}} \right) + \log(x^2 + 1) \right) = c_1 + \frac{\tanh^{-1} \left(\frac{3\sqrt{x^2 + 1}}{\sqrt{5}(\sqrt{x^2 + 1} + y(x))} \right)}{\sqrt{5}} \right]$$

✓ **Maple** : cpu = 0.31 (sec), leaf count = 112

$$\left\{ \frac{2}{3} \ln \left(-\frac{1296}{11} \left(\sqrt{x^2 + 1}y(x) - x^2 + (y(x))^2 - 1 \right) \left(y(x) + \sqrt{x^2 + 1} \right)^{-2} \right) - \frac{4\sqrt{5}}{15} \text{Artanh} \left(\frac{\sqrt{5}}{5} \left(3\sqrt{x^2 + 1} + y(x) \right) \right) \right\}$$

2.627 ODE No. 627

$$y'(x) = \frac{(y(x) \log(x) - 1)^2}{x}$$

✓ **Mathematica** : cpu = 0.755287 (sec), leaf count = 25

$$\left\{ \left\{ y(x) \rightarrow \frac{\tan(c_1 + \log(x))}{\log(x) \tan(c_1 + \log(x)) + 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.202 (sec), leaf count = 39

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

2.628 ODE No. 628

$$y'(x) = \frac{1}{3}x(3\sqrt{x^2 + 3y(x)} - 2)$$

✓ **Mathematica** : cpu = 0.0786758 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{48}(-54c_1x^2 + 81c_1^2 + 9x^4 - 16x^2) \right\} \right\}$$

✓ **Maple** : cpu = 0.177 (sec), leaf count = 23

$$\left\{ _C1 + \frac{3x^2}{4} + \frac{2}{3} - \sqrt{x^2 + 3y(x)} = 0 \right\}$$

2.629 ODE No. 629

$$y'(x) = \frac{(2y(x) \log(x) - 1)^2}{x}$$

✓ **Mathematica** : cpu = 0.699954 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{\sqrt{2}(\sqrt{2} \log(x) - \tan(\frac{1}{2}(\sqrt{2}c_1 + 2\sqrt{2} \log(x))))} \right\} \right\}$$

✓ **Maple** : cpu = 0.201 (sec), leaf count = 72

$$\left\{ y(x) = \frac{\sin(\ln(x) \sqrt{2}) _C1 + \cos(\ln(x) \sqrt{2})}{(2 \sin(\ln(x) \sqrt{2}) _C1 + 2 \cos(\ln(x) \sqrt{2})) \ln(x) + \cos(\ln(x) \sqrt{2}) \sqrt{2} _C1 - \sin(\ln(x) \sqrt{2}) \sqrt{2}} \right\}$$

2.630 ODE No. 630

$$y'(x) = \frac{e^{bx}}{e^{-bx}y(x) + 1}$$

✓ **Mathematica** : cpu = 0.521588 (sec), leaf count = 101

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

✓ **Maple** : cpu = 0.296 (sec), leaf count = 98

$$\left\{ y(x) = \frac{1}{e^{-bx}} \text{RootOf} \left(-e^{\text{RootOf} \left(\left(\tanh \left(\frac{2-C1 b-2bx-Z\sqrt{b^2+4b}}{2b} \right) \right)^2 b+4 \left(\tanh \left(1/2 \frac{\sqrt{b^2+4b}(2-C1 b-2bx-Z)}{b} \right) \right)^2 -4e^{-Z-b-4} \right)} \right) \right\}$$

2.631 ODE No. 631

$$y'(x) = \frac{1}{2}x^2(2\sqrt{x^3 - 6y(x)} + 1)$$

✓ **Mathematica** : cpu = 0.0863704 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{6}(-12c_1x^3 - 36c_1^2 - x^6 + x^3) \right\} \right\}$$

✓ **Maple** : cpu = 0.173 (sec), leaf count = 23

$$\left\{ -C1 - x^3 - \frac{1}{2} - \sqrt{x^3 - 6y(x)} = 0 \right\}$$

2.632 ODE No. 632

$$y'(x) = \frac{e^x}{e^{-x}y(x) + 1}$$

✓ **Mathematica** : cpu = 0.148193 (sec), leaf count = 65

$$\text{Solve} \left[\frac{1}{2} \log(-e^{-2x}y(x)^2 - e^{-x}y(x) + 1) + x = c_1 + \frac{\tanh^{-1}\left(\frac{y(x)+3e^x}{\sqrt{5}(y(x)+e^x)}\right)}{\sqrt{5}}, y(x) \right]$$

✓ **Maple** : cpu = 0.221 (sec), leaf count = 52

$$\left\{ x + \frac{\ln\left((y(x))^2(e^{-x})^2 + y(x)e^{-x} - 1\right)}{2} - \frac{\sqrt{5}}{5} \text{Artanh}\left(\frac{(2y(x)e^{-x} + 1)\sqrt{5}}{5}\right) - C1 = 0 \right\}$$

2.633 ODE No. 633

$$y'(x) = \frac{e^{2x/3}}{e^{-2x/3}y(x) + 1}$$

✓ **Mathematica** : cpu = 0.181838 (sec), leaf count = 85

$$\text{Solve} \left[7 \left(-9c_1 + 3 \log \left(-\frac{2}{3} e^{-4x/3} y(x)^2 - \frac{2}{3} e^{-2x/3} y(x) + 1 \right) + 4x \right) = 6\sqrt{7} \tanh^{-1} \left(\frac{y(x) + 4e^{2x/3}}{\sqrt{7}(y(x) + e^{2x/3})} \right), \right]$$

✓ **Maple** : cpu = 0.864 (sec), leaf count = 52

$$\left\{ y(x) = 1 \text{RootOf} \left(-e^{\text{RootOf} \left(343 - 343 \left(\tanh \left(\frac{1}{6} (4 - C1 - 4x - 3Z) \sqrt{7} \right) \right)^2 + 98 e^{-Z} \right) - 3 + 2Z + 2Z^2} \right) \left(e^{-\frac{2x}{3}} \right)^{-1} \right.$$

2.634 ODE No. 634

$$y'(x) = \frac{x^5 \sqrt{4x^2 y(x) + 1} + \frac{1}{2}}{x^3}$$

✓ **Mathematica** : cpu = 0.170757 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow \frac{-8c_1 x^6 + 16c_1^2 x^2 + x^{10} - 4}{16x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.204 (sec), leaf count = 26

$$\left\{ -C1 - \frac{1}{x} \sqrt{4x^2 y(x) + 1} + \frac{x^4}{2} = 0 \right\}$$

2.635 ODE No. 635

$$y'(x) = \frac{1}{2} x (2\sqrt{x^3 - 6y(x)} + x)$$

✓ **Mathematica** : cpu = 0.11325 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{24} (36c_1 x^2 - 36c_1^2 - 9x^4 + 4x^3) \right\} \right\}$$

✓ **Maple** : cpu = 0.163 (sec), leaf count = 22

$$\left\{ -C1 - \frac{3x^2}{2} - \sqrt{x^3 - 6y(x)} = 0 \right\}$$

2.636 ODE No. 636

$$y'(x) = y(x) (x^2 - \log(y(x)))$$

✓ **Mathematica** : cpu = 0.0508967 (sec), leaf count = 24

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

✓ **Maple** : cpu = 0.168 (sec), leaf count = 19

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

2.637 ODE No. 637

$$y'(x) = \frac{e^{-x^2} x}{e^{x^2} y(x) + 1}$$

✓ **Mathematica** : cpu = 16.2068 (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 = 1.829 (sec), leaf count = 84

$$\left\{ y(x) = -\frac{1}{e^{x^2}} \tan \left(\text{RootOf} \left(2x^2 - \ln \left(\frac{81 (\tan(_Z))^2}{10} + \frac{81}{10} \right) + 2 \ln(9/2 \tan(_Z) - 9/2) + 6_C1 - \right) \right. \right.$$

2.638 ODE No. 638

$$y'(x) = y(x)(-\log(x) - \log(\log(y(x))))$$

✗ **Mathematica** : cpu = 2.44493 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[1][y][x] == -(Log[x] - Log[Log[y[x]]])*y[x], y[x], x]`

✓ **Maple** : cpu = 0.152 (sec), leaf count = 35

$$\left\{ \int_{-b}^{y(x)} \frac{1}{-a (-\ln(\ln(_a)) x + x \ln(x) + \ln(_a))} d_a + \ln(x) - _C1 = 0 \right\}$$

2.639 ODE No. 639

$$y'(x) = y(x)(\log(x) - \log(\log(y(x))))^2$$

✗ **Mathematica** : cpu = 0.313482 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[1][y][x] == (Log[x] - Log[Log[y[x]]])^2*y[x], y[x], x]`

✓ **Maple** : cpu = 0.204 (sec), leaf count = 48

$$\left\{ \int_{-b}^{y(x)} \frac{1}{-a (-\ln(\ln(_a)))^2 x + 2 \ln(\ln(_a)) \ln(x) x - x (\ln(x))^2 + \ln(_a)} d_a + \ln(x) - _C1 = 0 \right\}$$

2.640 ODE No. 640

$$y'(x) = \frac{y(x)}{\log(\log(y(x))) - \log(x) + 1}$$

✗ **Mathematica** : cpu = 3.33643 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[1][y][x] == y[x]/(1 - Log[x] + Log[Log[y[x]]]), y[x], x]`

✓ **Maple** : cpu = 0.24 (sec), leaf count = 45

$$\left\{ \int_{-b}^{y(x)} \frac{-\ln(\ln(-a)) + \ln(x) - 1}{-a(-\ln(-a)\ln(\ln(-a)) + (\ln(x) - 1)\ln(-a) + x)} d_a - C1 = 0 \right\}$$

2.641 ODE No. 641

$$y'(x) = \frac{x^4 \sqrt{4x^2 y(x) + 1} + \frac{1}{2}}{x^3}$$

✓ **Mathematica** : cpu = 0.162481 (sec), leaf count = 35

$$\left\{ \left\{ y(x) \rightarrow \frac{-24c_1 x^5 + 36c_1^2 x^2 + 4x^8 - 9}{36x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.192 (sec), leaf count = 26

$$\left\{ -C1 + \frac{2x^3}{3} - \frac{1}{x} \sqrt{4x^2 y(x) + 1} = 0 \right\}$$

2.642 ODE No. 642

$$y'(x) = \frac{(4ax - y(x)^2)^2}{y(x)}$$

✓ **Mathematica** : cpu = 0.126678 (sec), leaf count = 105

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{4ax - \sqrt{2}\sqrt{a} \tanh\left(\frac{2\sqrt{2}ax - \sqrt{2}c_1}{\sqrt{a}}\right)} \right\}, \left\{ y(x) \rightarrow \sqrt{4ax - \sqrt{2}\sqrt{a} \tanh\left(\frac{2\sqrt{2}ax - \sqrt{2}c_1}{\sqrt{a}}\right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.239 (sec), leaf count = 286

$$\left\{ y(x) = \sqrt{4} \sqrt{\left(-C1 \left(ax - \frac{\sqrt{2}}{4} \sqrt{a} \right) e^{2x(\sqrt{2}\sqrt{a}-2ax)} + e^{-2x(\sqrt{2}\sqrt{a}+2ax)} \left(ax + \frac{\sqrt{2}}{4} \sqrt{a} \right) \right) \left(-C1 e^{2x(\sqrt{2}\sqrt{a}-2ax)} + e^{-2x(\sqrt{2}\sqrt{a}+2ax)} \left(ax + \frac{\sqrt{2}}{4} \sqrt{a} \right) \right)} \right\}$$

2.643 ODE No. 643

$$y'(x) = \frac{1}{3}x(3x\sqrt{x^2 + 3y(x)} - 2)$$

✓ **Mathematica** : cpu = 0.108504 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{12}(-6c_1x^3 + 9c_1^2 + x^6 - 4x^2) \right\} \right\}$$

✓ **Maple** : cpu = 0.168 (sec), leaf count = 22

$$\left\{ -C1 + \frac{x^3}{2} - \sqrt{x^2 + 3y(x)} = 0 \right\}$$

2.644 ODE No. 644

$$y'(x) = -\frac{1}{2}x^2(ax - 2\sqrt{a(ax^4 + 8y(x))})$$

✓ **Mathematica** : cpu = 0.25912 (sec), leaf count = 34

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{72}a(-96c_1x^3 + 144c_1^2 + 16x^6 - 9x^4) \right\} \right\}$$

✓ **Maple** : cpu = 0.325 (sec), leaf count = 27

$$\left\{ -C1 + \frac{4ax^3}{3} - \sqrt{a(ax^4 + 8y(x))} = 0 \right\}$$

2.645 ODE No. 645

$$y'(x) = y(x)(x - \log(y(x)))$$

✓ **Mathematica** : cpu = 0.0346607 (sec), leaf count = 20

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

✓ **Maple** : cpu = 0.087 (sec), leaf count = 14

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

2.646 ODE No. 646

$$y'(x) = \frac{\sqrt{x^3 - 6y(x)} + \frac{x^3}{2} + \frac{x^2}{2}}{x + 1}$$

✓ **Mathematica** : cpu = 0.166252 (sec), leaf count = 35

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{6} (18c_1 \log(x + 1) - 9c_1^2 + x^3 - 9 \log^2(x + 1)) \right\} \right\}$$

✓ **Maple** : cpu = 0.227 (sec), leaf count = 23

$$\left\{ -C1 - 3 \ln(1 + x) - \sqrt{x^3 - 6y(x)} = 0 \right\}$$

2.647 ODE No. 647

$$y'(x) = \frac{x(ay(x)^2 + bx^2)^2}{a^{5/2}y(x)}$$

✓ **Mathematica** : cpu = 0.378591 (sec), leaf count = 115

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{\frac{\sqrt{b} \tan\left(\frac{a^{3/2}bx^2+2c_1}{a^{9/4}\sqrt{b}}\right)}{\sqrt[4]{a}} - \frac{bx^2}{a}} \right\}, \left\{ y(x) \rightarrow \sqrt{\frac{\sqrt{b} \tan\left(\frac{a^{3/2}bx^2+2c_1}{a^{9/4}\sqrt{b}}\right)}{\sqrt[4]{a}} - \frac{bx^2}{a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.304 (sec), leaf count = 460

$$\left\{ y(x) = \frac{1}{a} \sqrt{- \left(-C1 e^{\frac{x^2}{2}} (2 \sqrt{-\frac{b}{a^{3/2}}} a^{3/2} + bx^2) a^{-\frac{3}{2}} + e^{\frac{x^2}{2}} (-2 \sqrt{-\frac{b}{a^{3/2}}} a^{3/2} + bx^2) a^{-\frac{3}{2}} \right) a \left((bx^2 - \sqrt{-ba^{-\frac{3}{2}}} a^{\frac{3}{2}}) e^{\frac{x^2}{2}} \right)} \right.$$

2.648 ODE No. 648

$$y'(x) = -\frac{\sqrt{ax^3} \left(-2\sqrt{ax^4 + 8y(x)} + \sqrt{ax} + \sqrt{a} \right)}{2(x+1)}$$

✓ **Mathematica** : cpu = 0.320135 (sec), leaf count = 128

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{72} (-96ac_1x^3 + 144ac_1x^2 - 288ac_1x + 288ac_1 \log(x+1) + 144ac_1^2 - 432ac_1 + 16ax^6 - 48ax^5) \right\} \right.$$

✓ **Maple** : cpu = 0.578 (sec), leaf count = 41

$$\left\{ \frac{1}{4} \sqrt{ax^4 + 8y(x)} \frac{1}{\sqrt{a}} - \frac{x^3}{3} + \frac{x^2}{2} - x + \ln(1+x) - C1 = 0 \right\}$$

2.649 ODE No. 649

$$y'(x) = x \sqrt{x^2 + 8y(x) - 2x + 1} - \frac{x}{4} + \frac{1}{4}$$

✓ **Mathematica** : cpu = 0.163101 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{8} (-16c_1x^2 + 16c_1^2 + 4x^4 - x^2 + 2x - 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.188 (sec), leaf count = 27

$$\left\{ -C1 + 2x^2 + \frac{1}{4} - \sqrt{x^2 - 2x + 1 + 8y(x)} = 0 \right\}$$

2.650 ODE No. 650

$$y'(x) = x\sqrt{a^2 + 2ax + x^2 + 4y(x)} - \frac{a}{2} - \frac{x}{2}$$

✓ **Mathematica** : cpu = 0.224763 (sec), leaf count = 40

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}(-a^2 - 2ax - 4c_1x^2 + 4c_1^2 + x^4 - x^2) \right\} \right\}$$

✓ **Maple** : cpu = 0.209 (sec), leaf count = 28

$$\left\{ -C1 + x^2 + \frac{1}{2} - \sqrt{x^2 + 2ax + a^2 + 4y(x)} = 0 \right\}$$

2.651 ODE No. 651

$$y'(x) = \frac{y(x)(x^2 + \log(y(x)))}{x}$$

✓ **Mathematica** : cpu = 0.0322707 (sec), leaf count = 16

$$\left\{ \left\{ y(x) \rightarrow e^{2c_1x+x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.065 (sec), leaf count = 13

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

2.652 ODE No. 652

$$y'(x) = \frac{x\sqrt{4ax - y(x)^2} + 2a}{y(x)}$$

✓ **Mathematica** : cpu = 1.8022 (sec), leaf count = 101

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{4096a^5x - 256a^4x^4 + 32a^2e^{c_1}x^2 - e^{2c_1}}}{32a^2} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{4096a^5x - 256a^4x^4 + 32a^2e^{c_1}x^2 - e^{2c_1}}}{32a^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.184 (sec), leaf count = 27

$$\left\{ -\sqrt{-(y(x))^2 + 4ax} - \frac{x^2}{2} - C1 = 0 \right\}$$

2.653 ODE No. 653

$$y'(x) = x\sqrt{x^2 + 4y(x)} - 4x - \frac{x}{2} + 1$$

✓ **Mathematica** : cpu = 0.167089 (sec), leaf count = 34

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}(-4c_1x^2 + 4c_1^2 + x^4 - x^2 + 4x) \right\} \right\}$$

✓ **Maple** : cpu = 0.169 (sec), leaf count = 24

$$\left\{ -C1 + x^2 + \frac{1}{2} - \sqrt{x^2 - 4x + 4y(x)} = 0 \right\}$$

2.654 ODE No. 654

$$y'(x) = \frac{\sqrt{x^2 + 3y(x)} - \frac{2x^2}{3} - \frac{2x}{3}}{x + 1}$$

✓ **Mathematica** : cpu = 0.150039 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{12}(-18c_1 \log(x + 1) + 9c_1^2 - 4x^2 + 9 \log^2(x + 1)) \right\} \right\}$$

✓ **Maple** : cpu = 0.219 (sec), leaf count = 23

$$\left\{ -C1 + \frac{3 \ln(1 + x)}{2} - \sqrt{x^2 + 3y(x)} = 0 \right\}$$

2.655 ODE No. 655

$$y'(x) = \frac{e^{-4x/3}y(x)^3}{e^{-2x/3}y(x) + 1}$$

✓ **Mathematica** : cpu = 20.4673 (sec), leaf count = 82

Solve $\left[\frac{3}{2} \log(y(x)) + \frac{1}{28} \left(-21 \log(-3y(x)^2 + 2e^{2x/3}y(x) + 2e^{4x/3}) + 6\sqrt{7} \tanh^{-1} \left(\frac{y(x) + 2e^{2x/3}}{\sqrt{7}y(x)} \right) + 28x \right) \right]$

✓ **Maple** : cpu = 0.669 (sec), leaf count = 64

$$\left\{ x - \frac{3}{4} \ln \left(3 (y(x))^2 (e^{-2/3x})^2 - 2y(x) e^{-2/3x} - 2 \right) + \frac{3\sqrt{7}}{14} \operatorname{Artanh} \left(\frac{\sqrt{7}}{14} (6y(x) e^{-2/3x} - 2) \right) + \frac{3}{2} \ln (y(x)) \right\}$$

2.656 ODE No. 656

$$y'(x) = \frac{y(x) (x^3 + \log(y(x)))}{x}$$

✓ **Mathematica** : cpu = 0.0382336 (sec), leaf count = 20

$$\left\{ \left\{ y(x) \rightarrow e^{3c_1x + \frac{x^3}{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.071 (sec), leaf count = 15

$$\left\{ y(x) = e^{\frac{x^3}{2}} e^{x-C1} \right\}$$

2.657 ODE No. 657

$$y'(x) = x^2 \sqrt{x^2 + 8y(x) - 2x + 1} - \frac{x}{4} + \frac{1}{4}$$

✓ **Mathematica** : cpu = 0.170934 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{72} (-96c_1x^3 + 144c_1^2 + 16x^6 - 9x^2 + 18x - 9) \right\} \right\}$$

✓ **Maple** : cpu = 0.184 (sec), leaf count = 26

$$\left\{ -C1 + \frac{4x^3}{3} - \sqrt{x^2 - 2x + 1 + 8y(x)} = 0 \right\}$$

2.658 ODE No. 658

$$y'(x) = \frac{\sqrt{x^2 + 8y(x) - 2x + 1} - \frac{x^2}{4} + \frac{1}{4}}{x + 1}$$

✓ **Mathematica** : cpu = 0.223073 (sec), leaf count = 45

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{8} (-32c_1 \log(4(x+1)) + 16c_1^2 - x^2 + 2x + 16 \log^2(4(x+1)) - 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.27 (sec), leaf count = 28

$$\left\{ -C1 + 4 \ln(1+x) - \frac{1}{4} - \sqrt{x^2 - 2x + 1 + 8y(x)} = 0 \right\}$$

2.659 ODE No. 659

$$y'(x) = x \sqrt{a^2 x^2 + 2abx + 4ay(x) + b^2 - 4c} - \frac{ax}{2} - \frac{b}{2}$$

✓ **Mathematica** : cpu = 0.401827 (sec), leaf count = 60

$$\left\{ \left\{ y(x) \rightarrow \frac{-4a^2 c_1 x^2 + 4a^2 c_1^2 + a^2 x^4 - a^2 x^2 - 2abx - b^2 + 4c}{4a} \right\} \right\}$$

✓ **Maple** : cpu = 0.21 (sec), leaf count = 41

$$\left\{ -C1 + ax^2 + \frac{a}{2} - \sqrt{a^2 x^2 + 2abx + b^2 + 4ay(x) - 4c} = 0 \right\}$$

2.660 ODE No. 660

$$y'(x) = x^2 \sqrt{a^2 + 2ax + x^2 + 4y(x)} - \frac{a}{2} - \frac{x}{2}$$

✓ **Mathematica** : cpu = 0.24161 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{36} (-9a^2 - 18ax - 24c_1 x^3 + 36c_1^2 + 4x^6 - 9x^2) \right\} \right\}$$

✓ **Maple** : cpu = 0.205 (sec), leaf count = 29

$$\left\{ -C1 + \frac{2x^3}{3} - \sqrt{x^2 + 2ax + a^2 + 4y(x)} = 0 \right\}$$

2.661 ODE No. 661

$$y'(x) = x^2 \sqrt{a^2 x^2 + 2abx + 4ay(x) + b^2 - 4c} - \frac{ax}{2} - \frac{b}{2}$$

✓ **Mathematica** : cpu = 0.383319 (sec), leaf count = 61

$$\left\{ \left\{ y(x) \rightarrow \frac{-24a^2 c_1 x^3 + 36a^2 c_1^2 + 4a^2 x^6 - 9a^2 x^2 - 18abx - 9b^2 + 36c}{36a} \right\} \right\}$$

✓ **Maple** : cpu = 0.194 (sec), leaf count = 39

$$\left\{ -C1 + \frac{2ax^3}{3} - \sqrt{a^2 x^2 + 2abx + b^2 + 4ay(x) - 4c} = 0 \right\}$$

2.662 ODE No. 662

$$y'(x) = x^2 \sqrt{x^2 - 4y(x) + 2x + 1} + \frac{x}{2} + \frac{1}{2}$$

✓ **Mathematica** : cpu = 0.174763 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{36} (24c_1 x^3 - 36c_1^2 - 4x^6 + 9x^2 + 18x + 9) \right\} \right\}$$

✓ **Maple** : cpu = 0.194 (sec), leaf count = 26

$$\left\{ -C1 - \frac{2x^3}{3} - \sqrt{x^2 + 2x + 1 - 4y(x)} = 0 \right\}$$

2.663 ODE No. 663

$$y'(x) = \frac{x^2 \sqrt{4ax - y(x)^2} + 2a}{y(x)}$$

✓ **Mathematica** : cpu = 2.12742 (sec), leaf count = 101

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{147456a^7 x - 4096a^6 x^6 + 128a^3 e^{c_1} x^3 - e^{2c_1}}}{192a^3} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{147456a^7 x - 4096a^6 x^6 + 128a^3 e^{c_1} x^3 - e^{2c_1}}}{192a^3} \right\} \right\}$$

✓ **Maple** : cpu = 0.174 (sec), leaf count = 27

$$\left\{ -\sqrt{-(y(x))^2 + 4ax} - \frac{x^3}{3} - C1 = 0 \right\}$$

2.664 ODE No. 664

$$y'(x) = x^2 \sqrt{x^2 + 4y(x)} - 4x - \frac{x}{2} + 1$$

✓ **Mathematica** : cpu = 0.175457 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{36} (-24c_1 x^3 + 36c_1^2 + 4x^6 - 9x^2 + 36x) \right\} \right\}$$

✓ **Maple** : cpu = 0.161 (sec), leaf count = 25

$$\left\{ -C1 + \frac{2x^3}{3} - \sqrt{x^2 - 4x + 4y(x)} = 0 \right\}$$

2.665 ODE No. 665

$$y'(x) = -\frac{\sqrt{a}(-2\sqrt{ax^4 + 8y(x)} + \sqrt{ax^4} + \sqrt{ax^3})}{2(x+1)}$$

✓ **Mathematica** : cpu = 0.247009 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{8} (-32ac_1 \log(x+1) + 16ac_1^2 - ax^4 + 16a \log^2(x+1)) \right\} \right\}$$

✓ **Maple** : cpu = 0.431 (sec), leaf count = 28

$$\left\{ -\frac{1}{4} \sqrt{ax^4 + 8y(x)} \frac{1}{\sqrt{a}} + \ln(1+x) - C1 = 0 \right\}$$

2.666 ODE No. 666

$$y'(x) = y(x) (x^3 + x^2 - \log(y(x)) + 1)$$

✓ **Mathematica** : cpu = 0.0663916 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow e^{-c_1 e^{-x} + x^3 - 2x^2 + 4x - 3} \right\} \right\}$$

✓ **Maple** : cpu = 0.167 (sec), leaf count = 24

$$\left\{ y(x) = e^{\frac{-C1}{e^x} + x^3 - 2x^2 + 4x - 3} \right\}$$

2.667 ODE No. 667

$$y'(x) = \frac{e^{-2bx}y(x)^3}{e^{-bx}y(x) + 1}$$

✓ **Mathematica** : cpu = 0.935379 (sec), leaf count = 90

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

✓ **Maple** : cpu = 0.209 (sec), leaf count = 83

$$\left\{ bx + b \operatorname{Artanh} \left((2y(x)e^{-bx} - b) \frac{1}{\sqrt{b^2 + 4b}} \right) \frac{1}{\sqrt{b^2 + 4b}} + \ln(y(x)e^{-bx}) - \frac{\ln(-by(x)e^{-bx} + (y(x))^2(e^{-b} - 1))}{2} \right\}$$

2.668 ODE No. 668

$$y'(x) = \frac{e^{-2x}y(x)^3}{e^{-x}y(x) + 1}$$

✓ **Mathematica** : cpu = 0.505397 (sec), leaf count = 78

$$\text{Solve} \left[\log(y(x)) + y(x)^2 \left(\frac{x}{y(x)^2} - \frac{\log(-y(x)^2 + e^x y(x) + e^{2x})}{2y(x)^2} + \frac{\tanh^{-1} \left(\frac{y(x) + 2e^x}{\sqrt{5}y(x)} \right)}{\sqrt{5}y(x)^2} \right) = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.693 (sec), leaf count = 58

$$\left\{ y(x) = e^{\operatorname{RootOf} \left(2\sqrt{5} \operatorname{Artanh} \left(\frac{1}{5} \frac{(-2e^{-Z} + e^x)\sqrt{5}}{e^x} \right) + 5 \ln(-(e^x)^2 - e^{-Z+x} + (e^{-Z})^2) + 10_C1 - 10_Z - 10x \right)} \right\}$$

2.669 ODE No. 669

$$y'(x) = \frac{e^x(3e^x - 2y(x)^{3/2})^2}{4\sqrt{y(x)}}$$

✓ **Mathematica** : cpu = 0.78012 (sec), leaf count = 264

$$\left\{ \left\{ y(x) \rightarrow \frac{(3e^{3c_1+x} + 2e^{3c_1} - 2e^{3e^x} + 3e^{x+3e^x})^{2/3}}{\sqrt[3]{8e^{3c_1+3e^x} + 4e^{6c_1} + 4e^{6e^x}}} \right\}, \left\{ y(x) \rightarrow -\frac{\sqrt[3]{-1}(3e^{3c_1+x} + 2e^{3c_1} - 2e^{3e^x} + 3e^{x+3e^x})}{\sqrt[3]{8e^{3c_1+3e^x} + 4e^{6c_1} + 4e^{6e^x}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.204 (sec), leaf count = 72

$$\left\{ -C1 + 1e^{-\frac{3e^x}{2} - \frac{9e^{2x}}{8}} \left(2(y(x))^{3/2} e^x - 2e^x - 3e^{2x} \right) \left(e^{\frac{3e^x}{2} - \frac{9e^{2x}}{8}} \right)^{-1} \left(2(y(x))^{3/2} e^x + 2e^x - 3e^{2x} \right)^{-1} = 0 \right\}$$

2.670 ODE No. 670

$$y'(x) = \frac{1}{2}ixy(x) \left(-2\sqrt{4\log(a) - x^2 + 4\log(y(x))} + i \right)$$

✓ **Mathematica** : cpu = 0.337113 (sec), leaf count = 99

$$\text{Solve} \left[-\log(y(x)) + \frac{1}{4} \left(-\frac{1}{2} \log(4\log(a) - x^2 + 4\log(y(x)) + 1) + i\sqrt{4\log(a) - x^2 + 4\log(y(x))} - i \tan \right) \right]$$

✓ **Maple** : cpu = 0.351 (sec), leaf count = 70

$$\left\{ -\frac{1}{2}\sqrt{-x^2 + 4\ln(a) + 4\ln(y(x))} + \frac{1}{2}\arctan\left(\sqrt{-x^2 + 4\ln(a) + 4\ln(y(x))}\right) - \frac{i}{4}\ln(x^2 - 4\ln(a) - \right.$$

2.671 ODE No. 671

$$y'(x) = \frac{(xy(x)^2 + 1)^2}{x^4y(x)}$$

✓ **Mathematica** : cpu = 0.368275 (sec), leaf count = 192

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{\sqrt{2}e^{\frac{2\sqrt{2}(c_1x+1)}{x}} - \frac{2e^{\frac{2\sqrt{2}(c_1x+1)}{x}}}{x} - \frac{2}{x} - \sqrt{2}}}{\sqrt{2e^{\frac{2\sqrt{2}(c_1x+1)}{x}} + 2}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{\sqrt{2}e^{\frac{2\sqrt{2}(c_1x+1)}{x}} - \frac{2e^{\frac{2\sqrt{2}(c_1x+1)}{x}}}{x} - \frac{2}{x} - \sqrt{2}}}{\sqrt{2e^{\frac{2\sqrt{2}(c_1x+1)}{x}} + 2}} \right\} \right.$$

✓ Maple : cpu = 0.2 (sec), leaf count = 231

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

2.672 ODE No. 672

$$y'(x) = \frac{x^2 \left(\sqrt{4y(x)^3 - 9x^4 + 3x} \right)}{y(x)^2}$$

✗ Mathematica : cpu = 300.059 (sec), leaf count = 0 , timed out

\$Aborted

✓ Maple : cpu = 0.202 (sec), leaf count = 36

$$\left\{ \int_{-b}^{y(x)} -a^2 \frac{1}{\sqrt{-9x^4 + 4a^3}} dx - \frac{x^3}{3} - C1 = 0 \right\}$$

2.673 ODE No. 673

$$y'(x) = \frac{\frac{1}{2}x^2 \cos(2y(x)) + \frac{x^2}{2} - \frac{1}{2} \sin(2y(x))}{x}$$

✓ Mathematica : cpu = 0.0746075 (sec), leaf count = 23

$$\left\{ \left\{ y(x) \rightarrow \tan^{-1} \left(\frac{3c_1 + 2x^3}{6x} \right) \right\} \right\}$$

✓ Maple : cpu = 0.48 (sec), leaf count = 17

$$\left\{ y(x) = \arctan \left(\frac{x^3 + 6C1}{3x} \right) \right\}$$

2.674 ODE No. 674

$$y'(x) = \frac{\sqrt{x^2 + 4y(x) - 4x - \frac{x^2}{2} + \frac{x}{2} + 1}}{x + 1}$$

✓ **Mathematica** : cpu = 0.215155 (sec), leaf count = 40

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}(-8c_1 \log(x + 1) + 4c_1^2 - x^2 + 4x + 4 \log^2(x + 1)) \right\} \right\}$$

✓ **Maple** : cpu = 0.26 (sec), leaf count = 27

$$\left\{ -C1 + 2 \ln(1 + x) - 1 - \sqrt{x^2 - 4x + 4y(x)} = 0 \right\}$$

2.675 ODE No. 675

$$y'(x) = \frac{ax^4 + ae^x x^3 + ax^3 - x^2 y(x)^2 - e^x x y(x)^2 - x y(x)^2 + y(x)}{x}$$

✓ **Mathematica** : cpu = 0.0498359 (sec), leaf count = 48

$$\left\{ \left\{ y(x) \rightarrow \sqrt{ax} \tanh \left(\frac{1}{6} \sqrt{a} (6c_1 + 2x^3 + 3x^2 + 6e^x x - 6e^x) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 46

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

2.676 ODE No. 676

$$y'(x) = \frac{x^6 \sqrt{4x^2 y(x) + 1} + \frac{x}{2} + \frac{1}{2}}{x^3(x + 1)}$$

✓ **Mathematica** : cpu = 0.290917 (sec), leaf count = 144

$$\left\{ \left\{ y(x) \rightarrow \frac{-72c_1 x^6 + 96c_1 x^5 - 144c_1 x^4 + 288c_1 x^3 + 144c_1^2 x^2 - 288c_1 x^2 \log(x + 1) + 9x^{10} - 24x^9 + 52x^8}{x^3(x + 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.474 (sec), leaf count = 43

$$\left\{ -C1 + 2 \ln(1 + x) - \frac{1}{x} \sqrt{4x^2 y(x) + 1} - 2x + x^2 - \frac{2x^3}{3} + \frac{x^4}{2} = 0 \right\}$$

2.677 ODE No. 677

$$y'(x) = \frac{ax^4 + ax^3 + ax^3 \log(x+1) - x^2 y(x)^2 - xy(x)^2 + y(x) - xy(x)^2 \log(x+1)}{x}$$

✓ **Mathematica** : cpu = 0.0318496 (sec), leaf count = 80

$$\left\{ \left\{ y(x) \rightarrow \sqrt{ax} \tanh \left(\frac{1}{12} (12\sqrt{a}c_1 + 4\sqrt{a}x^3 + 3\sqrt{a}x^2 + 6\sqrt{a}x^2 \log(x+1) + 6\sqrt{a}x - 6\sqrt{a} \log(x+1)) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.041 (sec), leaf count = 64

$$\left\{ y(x) = \tanh \left(\frac{\ln(1+x)x^2}{2} \sqrt{a} + \frac{x^3}{3} \sqrt{a} + \frac{x^2}{4} \sqrt{a} - \frac{\ln(1+x)}{2} \sqrt{a} + \sqrt{a} C1 + \frac{x}{2} \sqrt{a} + \frac{3}{4} \sqrt{a} \right) x \sqrt{a} \right\}$$

2.678 ODE No. 678

$$y'(x) = \frac{x^2 (2x \sqrt{x^3 - 6y(x)} + x + 1)}{2(x+1)}$$

✓ **Mathematica** : cpu = 0.225597 (sec), leaf count = 101

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{24} (24c_1 x^3 - 36c_1 x^2 + 72c_1 x - 72c_1 \log(x+1) - 36c_1^2 - 4x^6 + 12x^5 - 33x^4 + 40x^3 + 24x^3 \log(x+1)) \right\} \right\}$$

✓ **Maple** : cpu = 0.281 (sec), leaf count = 37

$$\left\{ -C1 - x^3 + \frac{3x^2}{2} - 3x + 3 \ln(1+x) - \frac{1}{2} - \sqrt{x^3 - 6y(x)} = 0 \right\}$$

2.679 ODE No. 679

$$y'(x) = \frac{x^4 + x^3 + x^3 \log(x) + 7x^2 y(x)^2 + 7xy(x)^2 + y(x) + 7xy(x)^2 \log(x)}{x}$$

✓ **Mathematica** : cpu = 0.0298267 (sec), leaf count = 59

$$\left\{ \left\{ y(x) \rightarrow \frac{x \tan \left(\frac{1}{12} (12\sqrt{7}c_1 + 4\sqrt{7}x^3 + 3\sqrt{7}x^2 + 6\sqrt{7}x^2 \log(x)) \right)}{\sqrt{7}} \right\} \right\}$$

✓ **Maple** : cpu = 0.042 (sec), leaf count = 37

$$\left\{ y(x) = \frac{x\sqrt{7}}{7} \tan \left(\frac{(6x^2 \ln(x) + 4x^3 + 3x^2 + 12_C1)\sqrt{7}}{12} \right) \right\}$$

2.680 ODE No. 680

$$y'(x) = \frac{\sqrt{x^2 - 4y(x) + 2x + 1} + \frac{x^2}{2} + x + \frac{1}{2}}{x + 1}$$

✓ **Mathematica** : cpu = 0.211806 (sec), leaf count = 39

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4} (8c_1 \log(x + 1) - 4c_1^2 + x^2 + 2x - 4 \log^2(x + 1) + 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.271 (sec), leaf count = 28

$$\left\{ -C1 - 2 \ln(1 + x) - \frac{1}{2} - \sqrt{x^2 + 2x + 1 - 4y(x)} = 0 \right\}$$

2.681 ODE No. 681

$$y'(x) = \frac{ax^2y(x)^2 + axy(x)^2 + axy(x)^2 \log\left(\frac{1}{x}\right) + bx^4 + bx^3 + bx^3 \log\left(\frac{1}{x}\right) + y(x)}{x}$$

✓ **Mathematica** : cpu = 0.0398627 (sec), leaf count = 84

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt{bx} \tan \left(\frac{1}{12} (12\sqrt{a}\sqrt{bc_1} + 4\sqrt{a}\sqrt{bx^3} + 9\sqrt{a}\sqrt{bx^2} - 6\sqrt{a}\sqrt{bx^2} \log(x)) \right)}{\sqrt{a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.051 (sec), leaf count = 57

$$\left\{ y(x) = \frac{x}{a} \tan \left(\frac{x^2 \ln(x^{-1})}{2} \sqrt{ab} + \frac{x^3}{3} \sqrt{ab} + \frac{3x^2}{4} \sqrt{ab} + -C1 \sqrt{ab} \right) \sqrt{ab} \right\}$$

2.682 ODE No. 682

$$y'(x) = \frac{2a}{x(-8a^2 + 2axy(x)^2 - xy(x))}$$

✓ **Mathematica** : cpu = 0.0801435 (sec), leaf count = 39

$$\text{Solve} \left[\frac{y(x)^2 e^{-4ay(x)}}{8a} - \frac{e^{-4ay(x)}}{2x} = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.294 (sec), leaf count = 28

$$\left\{ -C1 + \frac{-x(y(x))^2 + 4a}{e^{4ay(x)}x} = 0 \right\}$$

2.683 ODE No. 683

$$y'(x) = \frac{y(x)(x^4 y(x) \log(x(x+1)) - x^3 \log(x(x+1)) - 1)}{x}$$

✓ **Mathematica** : cpu = 0.342249 (sec), leaf count = 84

$$\left\{ \left\{ y(x) \rightarrow \frac{e^{\frac{2x^3}{9} + \frac{x}{3}}}{c_1 e^{\frac{x^2}{6}} x \sqrt[3]{x+1} (x(x+1))^{\frac{x^3}{3}} + e^{\frac{x^2}{6} + \frac{1}{18}(4x^2 - 3x + 6)} x} \right\} \right\}$$

✓ **Maple** : cpu = 0.13 (sec), leaf count = 166

$$\left\{ y(x) = \frac{1}{x} (x(1+x))^{-\frac{x^3}{3}} e^{\frac{2x^3}{9}} e^{-\frac{x^2}{6}} e^{\frac{x}{3}} \left(x^{-\frac{x^3}{3}} (1+x)^{-\frac{x^3}{3}} e^{\frac{x(3ix^2(\text{csgn}(ix(1+x)))^3 \pi - 3ix^2(\text{csgn}(ix(1+x)))^2 \text{csgn}(ix) \pi - 3ix^2(\text{csgn}(ix(1+x)))^2 \text{csgn}(ix) \pi)}{3}} \right) \right\}$$

2.684 ODE No. 684

$$y'(x) = \frac{x^2 \sqrt{x^2 + y(x)^2} + y(x)}{x}$$

✓ **Mathematica** : cpu = 0.0239159 (sec), leaf count = 20

$$\left\{ \left\{ y(x) \rightarrow x \sinh \left(\frac{1}{2} (2c_1 + x^2) \right) \right\} \right\}$$

✓ **Maple** : cpu = 2.541 (sec), leaf count = 30

$$\left\{ \ln \left(\sqrt{(y(x))^2 + x^2} + y(x) \right) - \frac{x^2}{2} - \ln(x) - C1 = 0 \right\}$$

2.685 ODE No. 685

$$y'(x) = \frac{x^3 \log((x-1)(x+1)) + y(x) + 7xy(x)^2 \log((x-1)(x+1))}{x}$$

✓ **Mathematica** : cpu = 0.0332867 (sec), leaf count = 87

$$\left\{ \left\{ y(x) \rightarrow \frac{x \tan \left(\frac{1}{2} (2\sqrt{7}c_1 - \sqrt{7}x^2 + \sqrt{7}x^2 \log(x-1) + \sqrt{7}x^2 \log(x+1) - \sqrt{7} \log(1-x) - \sqrt{7} \log(x+1)) \right)}{\sqrt{7}} \right\} \right\}$$

✓ **Maple** : cpu = 0.055 (sec), leaf count = 48

$$\left\{ y(x) = \frac{x\sqrt{7}}{7} \tan \left(\frac{(x^2 \ln((1+x)(x-1)) - x^2 - \ln((1+x)(x-1)) + 2C1 + 1)\sqrt{7}}{2} \right) \right\}$$

2.686 ODE No. 686

$$y'(x) = \frac{e^{2x^2} xy(x)^3}{e^{x^2} y(x) + 1}$$

✓ **Mathematica** : cpu = 15.8632 (sec), leaf count = 68

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

✓ **Maple** : cpu = 1.797 (sec), leaf count = 85

$$\left\{ y(x) = \frac{1}{e^{x^2}} \left(1 - \tan \left(\text{RootOf} \left(-2x^2 - \ln \left(\frac{81 (\tan(_Z))^2}{10} + \frac{81}{10} \right) \right) + 2 \ln(9/2 \tan(_Z) - 9/2) + 6 \right) \right)$$

2.687 ODE No. 687

$$y'(x) = \frac{x^3(-\log(\frac{x+1}{x-1})) + y(x) + xy(x)^2 \log(\frac{x+1}{x-1})}{x}$$

✓ **Mathematica** : cpu = 0.057599 (sec), leaf count = 130

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

✓ **Maple** : cpu = 0.072 (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

$$y'(x) = \frac{e^{\frac{x+1}{x-1}} x^3 + e^{\frac{x+1}{x-1}} xy(x)^2 + y(x)}{x}$$

✓ **Mathematica** : cpu = 0.102983 (sec), leaf count = 78

$$\left\{ \left\{ y(x) \rightarrow x \tan\left(\frac{1}{2}\left(2c_1 - 8e\text{Ei}\left(\frac{2}{x-1}\right) + e^{\frac{x}{x-1} + \frac{1}{x-1}} x^2 + 2e^{\frac{x}{x-1} + \frac{1}{x-1}} x - 3e^{\frac{2}{x-1} + 1}\right)\right)\right\} \right\}$$

✓ **Maple** : cpu = 0.062 (sec), leaf count = 61

$$\left\{ y(x) = \tan\left(\frac{x^2}{2} e^{\frac{1+x}{x-1}} + x e^{\frac{1+x}{x-1}} + 4e\text{Ei}(1, -2(x-1)^{-1}) - \frac{3}{2} e^{\frac{1+x}{x-1}} + _C1\right) x \right\}$$

2.689 ODE No. 689

$$y'(x) = \frac{-e^{x+1} x^3 + e^{x+1} xy(x)^2 + xy(x) - y(x)}{(x-1)x}$$

✓ **Mathematica** : cpu = 0.06607 (sec), leaf count = 60

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

✓ **Maple** : cpu = 0.044 (sec), leaf count = 25

$$\{y(x) = -\tanh(e^{1+x} - e^2 Ei(1, 1-x) + _C1) x\}$$

2.690 ODE No. 690

$$y'(x) = \frac{-\frac{x^2}{4} + x^3 \sqrt{x^2 + 8y(x) - 2x + 1} + \frac{1}{4}}{x + 1}$$

✓ **Mathematica** : cpu = 0.286215 (sec), leaf count = 127

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{72} (-96c_1 x^3 + 144c_1 x^2 - 288c_1 x + 288c_1 \log(4x + 4) + 144c_1^2 - 528c_1 + 16x^6 - 48x^5 + 132x^4) \right\} \right\}$$

✓ **Maple** : cpu = 0.317 (sec), leaf count = 40

$$\left\{ -C1 + \frac{4x^3}{3} - 2x^2 + 4x - 4 \ln(1+x) - \sqrt{x^2 - 2x + 1 + 8y(x)} = 0 \right\}$$

2.691 ODE No. 691

$$y'(x) = \frac{\frac{1}{2}x^3 \cos(2y(x)) + \frac{x^3}{2} - \frac{1}{2} \sin(2y(x))}{x}$$

✓ **Mathematica** : cpu = 0.0675125 (sec), leaf count = 21

$$\left\{ \left\{ y(x) \rightarrow \tan^{-1} \left(\frac{2c_1 + x^4}{4x} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.735 (sec), leaf count = 17

$$\left\{ y(x) = \arctan \left(\frac{x^4 + 8_C1}{4x} \right) \right\}$$

2.692 ODE No. 692

$$y'(x) = \frac{x^3 \sqrt{x^2 + y(x)^2} + y(x)}{x}$$

✓ **Mathematica** : cpu = 0.0235175 (sec), leaf count = 20

$$\left\{ \left\{ y(x) \rightarrow x \sinh \left(\frac{1}{3} (3c_1 + x^3) \right) \right\} \right\}$$

✓ **Maple** : cpu = 2.132 (sec), leaf count = 30

$$\left\{ \ln \left(\sqrt{(y(x))^2 + x^2} + y(x) \right) - \frac{x^3}{3} - \ln(x) - _C1 = 0 \right\}$$

2.693 ODE No. 693

$$y'(x) = e^{bx} (e^{-3bx} y(x)^3 + e^{-2bx} y(x)^2 + 1)$$

✓ **Mathematica** : cpu = 0.161736 (sec), leaf count = 146

$$\text{Solve} \left[-\frac{1}{3} (9b + 29)^{2/3} \text{RootSum} \left[\#1^3 (9b + 29)^{2/3} - 9\#1b - 3\#1 + (9b + 29)^{2/3} \&, \frac{\log \left(\frac{3e^{-2bx} y(x) + e^{-bx}}{\sqrt[3]{(9b+29)e^{-3bx}}} \right)}{\#1^2 (- (9b + 29)^{2/3})} + \right. \right.$$

✓ **Maple** : cpu = 0.105 (sec), leaf count = 40

$$\left\{ y(x) = \frac{1}{e^{-bx}} \text{RootOf} \left(-x - \int^{-Z} -(_a^3 + _a^2 - _a b + 1)^{-1} d_a + _C1 \right) \right\}$$

2.694 ODE No. 694

$$y'(x) = \frac{x^3 \sqrt{4x^2 y(x) + 1} + \frac{x}{2} + \frac{1}{2}}{x^3 (x + 1)}$$

✓ **Mathematica** : cpu = 0.266836 (sec), leaf count = 66

$$\left\{ \left\{ y(x) \rightarrow \frac{-8c_1 x^3 + 4c_1^2 x^2 + 8c_1 x^2 \log(x + 1) + 4x^4 - 8x^3 \log(x + 1) + 4x^2 \log^2(x + 1) - 1}{4x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.281 (sec), leaf count = 30

$$\left\{ -2 \ln(1+x) + 2x - \frac{1}{x} \sqrt{4x^2y(x) + 1} + _C1 = 0 \right\}$$

2.695 ODE No. 695

$$y'(x) = \frac{x^4 + x^3 + x^2y(x)^2 + xy(x)^2 + y(x) \log(x-1)}{x \log(x-1)}$$

✓ **Mathematica** : cpu = 0.0518771 (sec), leaf count = 34

$$\{\{y(x) \rightarrow x \tan(c_1 + 2\text{Ei}(\log(x-1)) + 3\text{Ei}(2 \log(x-1)) + \text{Ei}(3 \log(x-1)))\}\}$$

✓ **Maple** : cpu = 0.041 (sec), leaf count = 39

$$\{y(x) = \tan(-\text{Ei}(1, -3 \ln(x-1)) - 3 \text{Ei}(1, -2 \ln(x-1)) - 2 \text{Ei}(1, -\ln(x-1)) + _C1) x\}$$

2.696 ODE No. 696

$$y'(x) = \frac{e^{x+1}x^3 + 7e^{x+1}xy(x)^2 + y(x) \log(x-1)}{x \log(x-1)}$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out
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✓ **Maple** : cpu = 0.053 (sec), leaf count = 32

$$\left\{ y(x) = \frac{x\sqrt{7}}{7} \tan \left(\left(e \int \frac{xe^x}{\ln(x-1)} dx + _C1 \right) \sqrt{7} \right) \right\}$$

2.697 ODE No. 697

$$y'(x) = e^{2x/3}(e^{-2x}y(x)^3 + e^{-4x/3}y(x)^2 + 1)$$

✓ **Mathematica** : cpu = 0.116994 (sec), leaf count = 114

$$\text{Solve} \left[-\frac{35}{3} \text{RootSum} \left[-35\#1^3 + 9\sqrt[3]{35}\#1 - 35\&, \frac{\log \left(\frac{3e^{-4x/3}y(x)+e^{-2x/3}}{\sqrt[3]{35}\sqrt[3]{e^{-2x}}} - \#1 \right)}{3\sqrt[3]{35} - 35\#1^2} \& \right] = c_1 + \frac{1}{9} 35^{2/3} e^{4x/3} (e^{-2x/3})^{-1} \right]$$

✓ **Maple** : cpu = 0.107 (sec), leaf count = 40

$$\left\{ y(x) = \text{RootOf} \left(-x + 3 \int^{-Z} (3_a^3 + 3_a^2 - 2_a + 3)^{-1} d_a + _C1 \right) (e^{-\frac{2x}{3}})^{-1} \right\}$$

2.698 ODE No. 698

$$y'(x) = e^x(e^{-3x}y(x)^3 + e^{-2x}y(x)^2 + 1)$$

✓ **Mathematica** : cpu = 0.129332 (sec), leaf count = 108

$$\text{Solve} \left[-\frac{19}{3} \text{RootSum} \left[-19\#1^3 + 6\sqrt[3]{38}\#1 - 19\&, \frac{\log \left(\frac{3e^{-2x}y(x)+e^{-x}}{\sqrt[3]{38}\sqrt[3]{e^{-3x}}} - \#1 \right)}{2\sqrt[3]{38} - 19\#1^2} \& \right] = c_1 + \frac{1}{9} 38^{2/3} e^{2x} (e^{-3x})^{2/3} \right]$$

✓ **Maple** : cpu = 0.087 (sec), leaf count = 34

$$\left\{ y(x) = \frac{\text{RootOf} \left(-x + \int^{-Z} (_a^3 + _a^2 - _a + 1)^{-1} d_a + _C1 \right)}{e^{-x}} \right\}$$

2.699 ODE No. 699

$$y'(x) = \frac{x(3x^2\sqrt{x^2+3y(x)} - 2x - 2)}{3(x+1)}$$

✓ **Mathematica** : cpu = 0.221807 (sec), leaf count = 101

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{48}(-24c_1x^3 + 36c_1x^2 - 72c_1x + 72c_1 \log(x+1) + 36c_1^2 + 4x^6 - 12x^5 + 33x^4 - 36x^3 - 24x^3 \log(x+1)) \right\} \right.$$

✓ **Maple** : cpu = 0.277 (sec), leaf count = 36

$$\left\{ -C1 + \frac{x^3}{2} - \frac{3x^2}{4} + \frac{3x}{2} - \frac{3 \ln(1+x)}{2} - \sqrt{x^2 + 3y(x)} = 0 \right\}$$

2.700 ODE No. 700

$$y'(x) = \frac{1}{xy(x)(xy(x)^2 + x + 1)}$$

✓ **Mathematica** : cpu = 0.0623255 (sec), leaf count = 76

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{2xW\left(c_1e^{\frac{1}{2x}-\frac{1}{2}}\right) + x - 1}}{\sqrt{x}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{2xW\left(c_1e^{\frac{1}{2x}-\frac{1}{2}}\right) + x - 1}}{\sqrt{x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.111 (sec), leaf count = 62

$$\left\{ y(x) = \frac{1}{x} \sqrt{x \left(2 \operatorname{lambertW}\left(\frac{1}{2} C1 e^{-1/2 \frac{x-1}{x}}\right) x + x - 1 \right)}, y(x) = -\frac{1}{x} \sqrt{x \left(2 \operatorname{lambertW}\left(\frac{1}{2} C1 e^{-1/2 \frac{x-1}{x}}\right) x + x - 1 \right)} \right.$$

2.701 ODE No. 701

$$y'(x) = \frac{x^4 + x^4 \log(x) - 2x^2 y(x) - 2x^2 y(x) \log(x) + y(x)^2 + y(x)^2 \log(x) + 2e^x x - 2x - \log(x) - 1}{e^x - 1}$$

✗ **Mathematica** : cpu = 299.999 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 6.028 (sec), leaf count = 100

$$\left\{ y(x) = 1 \left(-C1 x^2 \left(e^{\int \frac{e^x}{\ln(x)+1} - (\ln(x)+1)^{-1} dx} \right)^{-2} - x^2 + -C1 \left(e^{\int \frac{e^x}{\ln(x)+1} - (\ln(x)+1)^{-1} dx} \right)^{-2} + 1 \right) \left(-C1 \right. \right.$$

2.702 ODE No. 702

$$y'(x) = \frac{-x^3 + x^3(-\log(x)) - xy(x)^2 + xy(x) - e^x y(x) - xy(x)^2 \log(x)}{x(x - e^x)}$$

✗ **Mathematica** : cpu = 300.033 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.088 (sec), leaf count = 35

$$\left\{ y(x) = \tan \left(\int \frac{x \ln(x)}{e^x - x} dx + \int \frac{x}{e^x - x} dx + -C1 \right) x \right\}$$

2.703 ODE No. 703

$$y'(x) = \frac{y(x)(x^3 y(x) + x^2 y(x) \log(x) - x^2 - x - x \log(x) + 1)}{(x-1)x}$$

✗ **Mathematica** : cpu = 301.062 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.236 (sec), leaf count = 68

$$\left\{ y(x) = \frac{e^{dilog(x)}}{x e^x} \left(\int -\frac{e^{dilog(x)}(x + \ln(x))}{e^x (x-1)^2} dx + x - C1 - \int -\frac{e^{dilog(x)}(x + \ln(x))}{e^x (x-1)^2} dx - C1 \right)^{-1} \right\}$$

2.704 ODE No. 704

$$y'(x) = \frac{2ax^3y(x)^2 + 2bx^5 - y(x) + xy(x)\log(x)}{x(x\log(x) - 1)}$$

✗ **Mathematica** : cpu = 300.025 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.052 (sec), leaf count = 45

$$\left\{ y(x) = \frac{x}{a} \tan \left(2 \int \frac{x^3}{x \ln(x) - 1} dx \sqrt{ab} + 2_C1 \sqrt{ab} \right) \sqrt{ab} \right\}$$

2.705 ODE No. 705

$$y'(x) = \frac{y(x)(x^4 + x^3 + \log(y(x)) + x)}{x}$$

✓ **Mathematica** : cpu = 0.0529586 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow x^x e^{c_1 x + \frac{x^4}{3} + \frac{x^3}{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.17 (sec), leaf count = 24

$$\left\{ y(x) = e^{\frac{x^4}{3}} e^{\frac{x^3}{2}} e^{x - C_1} x^x \right\}$$

2.706 ODE No. 706

$$y'(x) = -\frac{1}{8}x(y(x) + 1)^2(-\log(y(x) - 1) + \log(y(x) + 1) + 2\log(x))$$

✗ **Mathematica** : cpu = 300.06 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.484 (sec), leaf count = 65

$$\left\{ \int_{-b}^{y(x)} -\frac{1}{2_a + 2} \left(-\frac{x^2(-_a + 1) \ln(-_a - 1)}{2} + \frac{x^2(-_a + 1) \ln(-_a + 1)}{2} + x^2(-_a + 1) \ln(x) + 4_a - 4 \right) \right\}$$

2.707 ODE No. 707

$$y'(x) = \frac{1}{16}x(y(x) + 1)^2(-\log(y(x) - 1) + \log(y(x) + 1) + 2\log(x))^2$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.556 (sec), leaf count = 105

$$\left\{ \int_{-b}^{y(x)} \frac{1}{4-a+4} \left(\frac{x^2(-a+1)(\ln(-a-1))^2}{4} - (-a+1)x^2 \left(\ln(x) + \frac{\ln(-a+1)}{2} \right) \ln(-a-1) + \frac{x^2(-a+1)}{4} \right) dx \right\}$$

2.708 ODE No. 708

$$y'(x) = \frac{(4ax - y(x)^2)^3}{y(x)(4ax - y(x)^2 - 1)}$$

✓ **Mathematica** : cpu = 0.275752 (sec), leaf count = 89

$$\text{Solve} \left[2a \left(x - \frac{\text{RootSum} \left[-\#1^3 + 2\#1a - 2a\&, \frac{\#1a \log(-\#1+4ax-y(x)^2) - a \log(-\#1+4ax-y(x)^2)}{2a-3\#1^2} \& \right]}{2a} \right) = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.946 (sec), leaf count = 308

$$\left\{ \int_{-b}^x \frac{(4aa - (y(x))^2)^3}{64a^3a^3 - 48a^2a^2(y(x))^2 + 12aa(y(x))^4 - (y(x))^6 - 8aa^2 + 2a(y(x))^2 + 2a} dx \right\}$$

2.709 ODE No. 709

$$y'(x) = \frac{x^3 \sqrt{4ax - y(x)^2} + 2ax + 2a}{(x+1)y(x)}$$

✓ **Mathematica** : cpu = 4.21541 (sec), leaf count = 217

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{6} \sqrt{144ax - 24c_1x^3 + 36c_1x^2 - 72c_1x + 72c_1 \log(x+1) - 36c_1^2 - 4x^6 + 12x^5 - 33x^4 + 36x^3} \right\} \right\}$$

✓ **Maple** : cpu = 0.285 (sec), leaf count = 39

$$\left\{ -\sqrt{-(y(x))^2 + 4ax} - \frac{x^3}{3} + \frac{x^2}{2} - x + \ln(1+x) - C1 = 0 \right\}$$

2.710 ODE No. 710

$$y'(x) = \frac{2x^3 + 4x^2y(x) + 2xy(x)^2 + 2x + e^{\frac{1}{x}} - \log(x)}{\log(x) - e^{\frac{1}{x}}}$$

✗ **Mathematica** : cpu = 300.029 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 2.583 (sec), leaf count = 35

$$\left\{ y(x) = -x + \tan \left(2C1 - 2 \int \left(-\frac{\ln(x)}{x} + \frac{e^{x-1}}{x} \right)^{-1} dx \right) \right\}$$

2.711 ODE No. 711

$$y'(x) = -\frac{y(x)(x \log(y(x)) + \log(y(x)) - 1)}{x + 1}$$

✓ **Mathematica** : cpu = 0.0653766 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow e^{C1 e^{-x} + e^{-x-1} \text{Ei}(x+1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.135 (sec), leaf count = 31

$$\left\{ y(x) = 1e^{\frac{C1}{e^x}} \left(e^{\frac{\text{Ei}(1, -1-x)}{e^x e}} \right)^{-1} \right\}$$

2.712 ODE No. 712

$$y'(x) = \frac{\frac{x^2}{2} + x^3 \sqrt{x^2 - 4y(x) + 2x + 1} + x + \frac{1}{2}}{x + 1}$$

✓ **Mathematica** : cpu = 0.258679 (sec), leaf count = 115

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{36} (24c_1 x^3 - 36c_1 x^2 + 72c_1 x - 72c_1 \log(x + 1) - 36c_1^2 + 132c_1 - 4x^6 + 12x^5 - 33x^4 - 8x^3 + 2 \right. \right.$$

✓ **Maple** : cpu = 0.326 (sec), leaf count = 38

$$\left. \left\{ -C1 - \frac{2x^3}{3} + x^2 - 2x + 2 \ln(1 + x) - \sqrt{x^2 + 2x + 1 - 4y(x)} = 0 \right\} \right\}$$

2.713 ODE No. 713

$$y'(x) = \frac{-a^2 - aby(x) - ab\sqrt{x} + ab + b^2x + b^2}{a(a(-y(x)) - a\sqrt{x} + a + bx + b)}$$

✓ **Mathematica** : cpu = 0.119314 (sec), leaf count = 649

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{a^2 \text{Root} \left[\#1^6 (16e^{12c_1} + 16x^3) - \frac{24\#1^4 x^2}{a^4} + \frac{8\#1^3 x^{3/2}}{a^6} + \frac{9\#1^2 x}{a^8} - \frac{6\#1\sqrt{x}}{a^{10}} + \frac{1}{a^{12}} \&\mathcal{L}, 1 \right]} - \frac{a\sqrt{x} - a -}{a} \right. \right.$$

✓ **Maple** : cpu = 48.503 (sec), leaf count = 86

$$\left. \left\{ y(x) = \frac{1}{2a} \left(3 \tanh \left(\text{RootOf} \left(729 x^3 (\tanh(_Z))^6 a^6 - 2187 x^3 (\tanh(_Z))^4 a^6 + 2187 x^3 (\tanh(_Z))^2 a^6 \right. \right. \right. \right.$$

2.714 ODE No. 714

$$y'(x) = -\frac{y(x) (x^3 y(x) + x^2 y(x) \log(x) - x^2 + e^x - x \log(x) - \log(\frac{1}{x}))}{x (e^x - \log(\frac{1}{x}))}$$

✗ **Mathematica** : cpu = 300.038 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.672 (sec), leaf count = 99

$$\left\{ y(x) = 1e^{\int -\frac{x \ln(x) + x^2 + \ln(x^{-1}) - e^x}{(\ln(x^{-1}) - e^x)x} dx} \left(\int -\frac{x(x + \ln(x))}{\ln(x^{-1}) - e^x} e^{\int -\frac{x \ln(x) + x^2 + \ln(x^{-1}) - e^x}{(\ln(x^{-1}) - e^x)x} dx} dx + -C1 \right)^{-1} \right\}$$

2.715 ODE No. 715

$$y'(x) = \frac{-\frac{x^2}{2} + x^3 \sqrt{x^2 + 4y(x) - 4x + \frac{x}{2} + 1}}{x + 1}$$

✓ **Mathematica** : cpu = 0.242841 (sec), leaf count = 104

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{36} (-24c_1 x^3 + 36c_1 x^2 - 72c_1 x + 72c_1 \log(x + 1) + 36c_1^2 + 4x^6 - 12x^5 + 33x^4 - 36x^3 - 24x^3 \log(x + 1)) \right\} \right.$$

✓ **Maple** : cpu = 0.284 (sec), leaf count = 39

$$\left\{ -C1 + \frac{2x^3}{3} - x^2 + 2x - 2 \ln(1 + x) - \sqrt{x^2 - 4x + 4y(x)} = 0 \right\}$$

2.716 ODE No. 716

$$y'(x) = \frac{\sqrt{9x^4 - 4y(x)^3} + 3x^4 + 3x^3}{(x + 1)y(x)^2}$$

✓ **Mathematica** : cpu = 4.09631 (sec), leaf count = 133

$$\left\{ \left\{ y(x) \rightarrow \left(-\frac{3}{2} \right)^{2/3} \sqrt[3]{8c_1 \log(x + 1) - 4c_1^2 + x^4 - 4 \log^2(x + 1)} \right\}, \left\{ y(x) \rightarrow \left(\frac{3}{2} \right)^{2/3} \sqrt[3]{8c_1 \log(x + 1) - 4c_1^2 + x^4 - 4 \log^2(x + 1)} \right\} \right.$$

✓ **Maple** : cpu = 0.351 (sec), leaf count = 37

$$\left\{ \int_{-b}^{y(x)} -a^2 \frac{1}{\sqrt{9x^4 - 4a^3}} da - \ln(1+x) - C1 = 0 \right\}$$

2.717 ODE No. 717

$$y'(x) = \frac{\sqrt{a^2 + 2ax + x^2 + 4y(x)} - \frac{ax}{2} - \frac{a}{2} - \frac{x^2}{2} - \frac{x}{2}}{x+1}$$

✓ **Mathematica** : cpu = 0.306452 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}(-a^2 - 2ax - 8c_1 \log(x+1) + 4c_1^2 - x^2 + 4 \log^2(x+1)) \right\} \right\}$$

✓ **Maple** : cpu = 0.35 (sec), leaf count = 33

$$\left\{ -C1 + \frac{a}{2} + 2 \ln(1+x) - \sqrt{x^2 + 2ax + a^2 + 4y(x)} = 0 \right\}$$

2.718 ODE No. 718

$$y'(x) = e^{-x^2} x (e^{3x^2} y(x)^3 + e^{2x^2} y(x)^2 + 1)$$

✓ **Mathematica** : cpu = 0.118678 (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 = 0.067 (sec), leaf count = 44

$$\left\{ y(x) = - \frac{11 \text{RootOf} \left(-5x^2 + 20250 \int^{-Z} (121 a^3 + 3375 a - 3375)^{-1} da + 6 C1 \right) + 15}{45 e^{x^2}} \right\}$$

2.719 ODE No. 719

$$y'(x) = \frac{e^{-x}y(x)(x^2y(x)\log(2x) - e^x - x\log(2x))}{x}$$

✓ **Mathematica** : cpu = 0.0887911 (sec), leaf count = 49

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

✓ **Maple** : cpu = 0.168 (sec), leaf count = 57

$$\left\{ y(x) = -\frac{x^{e^{-x}} 2^{e^{-x}} e^{\text{Ei}(1,x)}}{x \left(\int x^{e^{-x}} 2^{e^{-x}} e^{\text{Ei}(1,x)} e^{-x} (\ln(2) + \ln(x)) dx + _C1 \right)} \right\}$$

2.720 ODE No. 720

$$y'(x) = \frac{x^3 \left(\sqrt{9x^4 - 4y(x)^3} + 3x + 3 \right)}{(x+1)y(x)^2}$$

✓ **Mathematica** : cpu = 4.36525 (sec), leaf count = 314

$$\left\{ \left\{ y(x) \rightarrow \sqrt[3]{6c_1x^3 - 9c_1x^2 + 18c_1x - 18c_1\log(x+1) - 9c_1^2 - x^6 + 3x^5 - 6x^4 + 9x^3 + 6x^3\log(x+1) - 9c_1^3} \right\} \right\}$$

✓ **Maple** : cpu = 0.242 (sec), leaf count = 48

$$\left\{ \int_{-b}^{y(x)} -a^2 \frac{1}{\sqrt{9x^4 - 4a^3}} da - \frac{x^3}{3} + \frac{x^2}{2} - x + \ln(1+x) - _C1 = 0 \right\}$$

2.721 ODE No. 721

$$y'(x) = \frac{1}{36}\sqrt{x}(18x^{3/2} + x^6 - 12x^3y(x) + 36y(x)^2)$$

✓ **Mathematica** : cpu = 0.0181373 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{c_1 - \frac{2x^{3/2}}{3}} + \frac{x^3}{6} \right\} \right\}$$

✓ **Maple** : cpu = 0.082 (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

$$y'(x) = -\frac{y(x)^3}{x(-y(x) + 2y(x)\log(x) - 1)}$$

✓ **Mathematica** : cpu = 47.4084 (sec), leaf count = 493

$$\text{Solve} \left[\frac{\sqrt[3]{-2} \left((-2)^{2/3} - \frac{(1-2\log(x))^2 \left(-\frac{1}{(2\log(x)-1)^3} \right)^{2/3} (y(x)(5-4\log(x))+2)}{2\sqrt[3]{2}(y(x)(2\log(x)-1)-1)} \right)}{\left(\frac{y(x)(4\log(x)-5)-2}{\sqrt[3]{2} \sqrt[3]{-\frac{1}{(2\log(x)-1)^3} (2\log(x)-1)(y(x)(2\log(x)-1)-1)}} \right)} \right]$$

✓ **Maple** : cpu = 0.295 (sec), leaf count = 96

$$\left\{ y(x) = 1e^{\text{RootOf}\left(-e^{-Z}\ln\left(\frac{e^{-Z}+2}{2x^4}\right)+3e^{-Z}-C1+_Ze^{-Z}+2\right)} \left(2e^{\text{RootOf}\left(-e^{-Z}\ln\left(1/2\frac{e^{-Z}+2}{x^4}\right)+3e^{-Z}-C1+_Ze^{-Z}+2\right)} \ln(x) \right) \right\}$$

2.723 ODE No. 723

$$y'(x) = \frac{2a}{32a^3x^2 - 16a^2xy(x)^2 + 2ay(x)^4 + y(x)}$$

✓ **Mathematica** : cpu = 0.0657644 (sec), leaf count = 663

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt[3]{-1024a^6c_1^3 + 9216a^5c_1x - 432a^2 + \sqrt{4(-64a^4c_1^2 - 192a^3x)^3 + (-1024a^6c_1^3 + 9216a^5c_1x)}}}{12\sqrt[3]{2}a} \right. \right.$$

✓ **Maple** : cpu = 0.074 (sec), leaf count = 864

$$\left\{ y(x) = \frac{1}{6a} \sqrt[3]{\left(64 - C1^3a^4 - 576 - C1 a^3x + 3 \sqrt{-12288 - C1^4a^7x + 24576 - C1^2a^6x^2 - 12288 a^5x^3 + 3}\right)} \right.$$

2.724 ODE No. 724

$$y'(x) = -\frac{y(x)^3}{x(-y(x) + y(x) \log(x) - 1)}$$

✓ **Mathematica** : cpu = 55.8922 (sec), leaf count = 422

$$\text{Solve} \left[-\frac{\sqrt[3]{-2} \left(\frac{1-y(x)(\log(x)-4)}{\sqrt[3]{2} \sqrt[3]{-\frac{1}{(\log(x)-1)^3} (\log(x)-1)(y(x)(\log(x)-1)-1)}} + (-2)^{2/3} \right) \left(\frac{2^{2/3}(y(x)(\log(x)-4)-1)}{\sqrt[3]{-\frac{1}{(\log(x)-1)^3} (\log(x)-1)(y(x)(\log(x)-1)-1)}} + \right)}{\right.$$

✓ **Maple** : cpu = 0.057 (sec), leaf count = 20

$$\left\{ y(x) = -\left(\text{lambertW}(-C1 e^{-2x}) - \ln(x) + 2\right)^{-1} \right\}$$

2.725 ODE No. 725

$$y'(x) = \frac{x^2 \log(2x) + 2xy(x) \log(2x) + y(x)^2 \log(2x) - \log(x) + \log(2x)}{\log(x)}$$

✓ **Mathematica** : cpu = 0.24183 (sec), leaf count = 19

$$\{ \{ y(x) \rightarrow \tan(c_1 + \log(2)\text{li}(x) + x) - x \} \}$$

✓ **Maple** : cpu = 0.83 (sec), leaf count = 25

$$\{ y(x) = -x - \tan(\ln(2) Ei(1, -\ln(x)) + _C1 - x) \}$$

2.726 ODE No. 726

$$y'(x) = \frac{a^2 - aby(x) - ab\sqrt{x} - b^2x + bc}{a(ay(x) + a\sqrt{x} + bx - c)}$$

✓ **Mathematica** : cpu = 0.0854425 (sec), leaf count = 625

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{a^2 \text{Root} \left[\#1^6 (16e^{12c_1} + 16x^3) - \frac{24\#1^4 x^2}{a^4} + \frac{8\#1^3 x^{3/2}}{a^6} + \frac{9\#1^2 x}{a^8} - \frac{6\#1\sqrt{x}}{a^{10}} + \frac{1}{a^{12}} \&x, 1 \right]} - \frac{a\sqrt{x} + bx - c}{a} \right\} \right\}$$

✓ **Maple** : cpu = 0.294 (sec), leaf count = 83

$$\left\{ y(x) = \frac{1}{2a} \left(3 \tanh \left(\text{RootOf} \left(-729 x^3 (\tanh(_Z))^6 a^6 + 2187 x^3 (\tanh(_Z))^4 a^6 - 2187 x^3 (\tanh(_Z))^2 \right) \right) \right) \right\}$$

2.727 ODE No. 727

$$y'(x) = \frac{y(x)(y(x) + 2x + 2)}{(x + 1)(\log(y(x)) + 2x - 1)}$$

✓ **Mathematica** : cpu = 0.412712 (sec), leaf count = 29

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

✓ **Maple** : cpu = 0.277 (sec), leaf count = 25

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

2.728 ODE No. 728

$$y'(x) = \frac{y(x)(x^3 + 3y(x)^2)}{x(6y(x)^2 + x)}$$

✓ **Mathematica** : cpu = 0.357613 (sec), leaf count = 72

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{x}\sqrt{W\left(\frac{6e^{2c_1+x^2}}{x}\right)}}{\sqrt{6}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{x}\sqrt{W\left(\frac{6e^{2c_1+x^2}}{x}\right)}}{\sqrt{6}} \right\} \right\}$$

✓ **Maple** : cpu = 0.285 (sec), leaf count = 50

$$\left\{ \left((y(x))^{-2} + 6x^{-1} \right)^{-1} = \frac{x}{54} \left(e^{\text{RootOf}\left(x^2 e^{-z} - e^{-z} \ln\left(\frac{e^{-z}+9}{2}\right) + 3e^{-z} - C1 + z e^{-z} + 9\right)} + 9 \right) \right\}$$

2.729 ODE No. 729

$$y'(x) = \frac{(x - y(x))y(x)}{x(x - y(x)^3)}$$

✓ **Mathematica** : cpu = 0.301222 (sec), leaf count = 327

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{2}(6c_1 - 6\log(x))}{3\sqrt[3]{\sqrt{4(6c_1 - 6\log(x))^3 + 2916x^2} + 54x}} - \frac{\sqrt[3]{\sqrt{4(6c_1 - 6\log(x))^3 + 2916x^2} + 54x}}{3\sqrt[3]{2}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt[3]{2}(6c_1 - 6\log(x))}{3\sqrt[3]{\sqrt{4(6c_1 - 6\log(x))^3 + 2916x^2} + 54x}} + \frac{\sqrt[3]{\sqrt{4(6c_1 - 6\log(x))^3 + 2916x^2} + 54x}}{3\sqrt[3]{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.112 (sec), leaf count = 497

$$\left\{ y(x) = \frac{1}{3} \sqrt[3]{-27x + 3\sqrt{24 - C1^3 - 72 - C1^2 \ln(x) + 72 - C1(\ln(x))^2 - 24(\ln(x))^3 + 81x^2} - 3\sqrt[3]{-27x + 3\sqrt{24 - C1^3 - 72 - C1^2 \ln(x) + 72 - C1(\ln(x))^2 - 24(\ln(x))^3 + 81x^2}}} \right\}$$

2.730 ODE No. 730

$$y'(x) = \frac{e^x(2y(x)^{3/2} - 3e^x)^3}{4\sqrt{y(x)}(2y(x)^{3/2} - 3e^x + 2)}$$

✗ **Mathematica** : cpu = 48.816 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == (E^x*(-3*E^x + 2*y[x]^(3/2))^3)/(4*sqrt[y[x]]*(2 - 3*E^x

✓ **Maple** : cpu = 1.975 (sec), leaf count = 49

$$\left\{ e^x - \int^{(y(x))^{\frac{3}{2}} - \frac{3e^x}{2}} \frac{2_a}{3_a^3 - 3_a - 3} + \frac{2}{3_a^3 - 3_a - 3} d_a - C1 = 0 \right\}$$

2.731 ODE No. 731

$$y'(x) = \frac{2y(x) + 1}{x(2xy(x)^3 + xy(x)^2 - 2)}$$

✓ **Mathematica** : cpu = 0.182244 (sec), leaf count = 47

$$\text{Solve} \left[\frac{1}{64}(-4y(x)^2 + 4y(x) - 2 \log(8y(x) + 4) + 3) - \frac{1}{4x(2y(x) + 1)} = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.179 (sec), leaf count = 42

$$\left\{ y(x) = \frac{e^{\text{RootOf}(x(e^{-Z})^3 - 4x(e^{-Z})^2 + 8x_C1 e^{-Z} + 2_Z e^{-Z}x + 3e^{-Z}x + 16)}}}{2} - \frac{1}{2} \right\}$$

2.732 ODE No. 732

$$y'(x) = \frac{x^3 \sqrt{a^2 + 2ax + x^2 + 4y(x)} - \frac{ax}{2} - \frac{a}{2} - \frac{x^2}{2} - \frac{x}{2}}{x + 1}$$

✓ **Mathematica** : cpu = 0.455874 (sec), leaf count = 110

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{36}(-9a^2 - 18ax - 24c_1x^3 + 36c_1x^2 - 72c_1x + 72c_1 \log(x + 1) + 36c_1^2 + 4x^6 - 12x^5 + 33x^4 - \right. \right.$$

✓ **Maple** : cpu = 0.366 (sec), leaf count = 43

$$\left\{ -C1 + \frac{2x^3}{3} - x^2 + 2x - 2 \ln(1+x) - \sqrt{x^2 + 2ax + a^2 + 4y(x)} = 0 \right\}$$

2.733 ODE No. 733

$$y'(x) = \csc(x) (x^4 \log(2x) - 2x^2 y(x) \log(2x) + y(x)^2 \log(2x) - \log(2x) + 2x \sin(x))$$

✗ **Mathematica** : cpu = 300.004 (sec), leaf count = 0 , timed out

\$Aborted

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.734 ODE No. 734

$$y'(x) = \frac{y(x) (x^3 - x \log(y(x)) - \log(y(x)))}{x + 1}$$

✓ **Mathematica** : cpu = 0.105216 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow \exp(-c_1 e^{-x} - e^{-x-1} \text{Ei}(x+1) + x^2 - 3x + 4) \right\} \right\}$$

✓ **Maple** : cpu = 0.163 (sec), leaf count = 39

$$\left\{ y(x) = \frac{e^{x^2} e^4}{(e^x)^3} e^{\frac{-C1}{e^x}} e^{\frac{\text{Ei}(1, -1-x)}{e^x}} \right\}$$

2.735 ODE No. 735

$$y'(x) = \frac{(2y(x) \log(x) - 1)^3}{x(-y(x) + 2y(x) \log(x) - 1)}$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.079 (sec), leaf count = 104

$$\left\{ y(x) = \frac{71 \text{RootOf}(-82944 \int^{-Z} (5041 _a^3 - 27648 _a + 27648) _a^{-1} d_a - 16 \ln(x) + 3 _C1) - 142 \ln(x) \text{RootOf}(-82944 \int^{-Z} (5041 _a^3 - 27648 _a + 27648) _a^{-1} d_a - 16 \ln(x) + 3 _C1) - 16 \ln(x) + 3 _C1}{142 \ln(x) \text{RootOf}(-82944 \int^{-Z} (5041 _a^3 - 27648 _a + 27648) _a^{-1} d_a - 16 \ln(x) + 3 _C1) - 16 \ln(x) + 3 _C1} \right\}$$

2.736 ODE No. 736

$$y'(x) = \frac{x^4 - 2x^2y(x) + 2x^2 + y(x)^2 + 2x - 1}{x + 1}$$

✓ **Mathematica** : cpu = 0.095769 (sec), leaf count = 31

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

✓ **Maple** : cpu = 0.248 (sec), leaf count = 47

$$\left\{ y(x) = \frac{-C1 x^4 + 2 - C1 x^3 - C1 x^2 - 2 - C1 x + x^2 - 2 - C1 + 1}{-C1 x^2 + 2 - C1 x + 1} \right\}$$

2.737 ODE No. 737

$$y'(x) = \frac{x(2x^3 - 2xy(x) + x - 1)}{x^2 - y(x)}$$

✓ **Mathematica** : cpu = 0.0291489 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(W \left(-e^{c_1 + \frac{4x^3}{3} - 2x^2 - 1} \right) + 1 \right) + x^2 \right\} \right\}$$

✓ **Maple** : cpu = 0.105 (sec), leaf count = 29

$$\left\{ y(x) = x^2 + \frac{1}{2} \text{lambertW} \left(-2 \frac{e^{4/3 x^3} - C1 e^{-1}}{(e^{x^2})^2} \right) + \frac{1}{2} \right\}$$

2.738 ODE No. 738

$$y'(x) = \frac{2a}{32a^3 - 16a^2xy(x)^2 + 2ax^2y(x)^4 - x^2y(x)}$$

✓ **Mathematica** : cpu = 0.504136 (sec), leaf count = 1347

$$\left\{ \left\{ y(x) \rightarrow -\frac{4a + e^{c_1}}{12a} + \frac{\sqrt[3]{4608x^2a^4 - 128x^3a^3 + 1152e^{c_1}x^2a^3 - 96e^{c_1}x^3a^2 - 432x^3a^2 - 24e^{2c_1}x^3a - 2e^{3c_1}}}{12a} \right\} \right\}$$

✓ **Maple** : cpu = 0.885 (sec), leaf count = 1096

$$\left\{ y(x) = \frac{1}{12_C1\ ax} \sqrt[3]{\left(-216_C1^3 a^2 x + 576 a^3_C1^2 + 12 \sqrt{-\frac{49152_C1^4 a^7 - 324_C1^4 a^2 x^3 + 1728}{}}\right)} \right.$$

2.739 ODE No. 739

$$y'(x) = \frac{2y(x) + 1}{x(2xy(x)^2 + xy(x) - 2)}$$

✓ **Mathematica** : cpu = 0.12087 (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 = 0.192 (sec), leaf count = 35

$$\left\{ y(x) = \frac{e^{\text{RootOf}(x(e^{-z})^2 + 2_C1 x e^{-z} - z x e^{-z} - x e^{-z} + 4)}}{2} - \frac{1}{2} \right\}$$

2.740 ODE No. 740

$$y'(x) = \frac{x^4 - 2x^2 y(x)^2 + y(x)^4 + x}{y(x)}$$

✓ **Mathematica** : cpu = 0.0605535 (sec), leaf count = 74

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{2c_1 x^2 + 2x^3 - 1}}{\sqrt{2}\sqrt{c_1 + x}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{2c_1 x^2 + 2x^3 - 1}}{\sqrt{2}\sqrt{c_1 + x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.107 (sec), leaf count = 72

$$\left\{ y(x) = \frac{\sqrt{2}}{2_C1 + 2x} \sqrt{(-C1 + x)(2_C1 x^2 + 2x^3 - 1)}, y(x) = -\frac{\sqrt{2}}{2_C1 + 2x} \sqrt{(-C1 + x)(2_C1 x^2 + 2x^3 - 1)} \right.$$

2.741 ODE No. 741

$$y'(x) = \frac{x(ay(x)^2 + bx^2)^3}{a^{5/2}y(x)(ay(x)^2 + a + bx^2)}$$

✓ **Mathematica** : cpu = 2.89056 (sec), leaf count = 175

$$\text{Solve} \left[\frac{1}{2} \left(x^2 - a^{3/2} \text{RootSum} \left[\#1^3 b^3 + 3\#1^2 ab^2 y(x)^2 + \#1 a^{3/2} b^2 + 3\#1 a^2 b y(x)^4 + a^{5/2} b y(x)^2 + a^{5/2} b + a^{3/2} \right] \right) \right]$$

✓ **Maple** : cpu = 1.093 (sec), leaf count = 400

$$\left\{ \int_{-b}^x \frac{(-a^2 b + a(y(x))^2)^3 - a}{a^3} \left((y(x))^6 a^3 + 3 a^2 b - a^2 (y(x))^4 + 3 a b^2 - a^4 (y(x))^2 + b^3 - a^6 + a^{5/2} b (y(x))^2 + a^{3/2} \right) \right.$$

2.742 ODE No. 742

$$y'(x) = -\frac{(-\cos(y(x)) + x + 1) \cos(y(x))}{(x + 1)(x \sin(y(x)) - 1)}$$

✓ **Mathematica** : cpu = 4.23876 (sec), leaf count = 3913

$$\left\{ \left\{ y(x) \rightarrow -\sec^{-1} \left(\frac{c_1 x^3}{x^2 - 1} + \frac{\log(x + 1)x^3}{x^2 - 1} - \frac{c_1^3 x^3}{(x^2 - 1)(c_1^2 + 2 \log(x + 1)c_1 + \log^2(x + 1) + 1)} - \frac{c_1^3 x^3}{(x^2 - 1)} \right) \right. \right.$$

✓ **Maple** : cpu = 1.855 (sec), leaf count = 261

$$\left\{ y(x) = \arctan \left(\frac{-\ln(1 + x) + C_1}{C_1^2 - 2 C_1 \ln(1 + x) + (\ln(1 + x))^2 + 1} \left(x \ln(1 + x) - C_1 x - \sqrt{(\ln(1 + x))^2 + 1} \right) \right) \right.$$

2.743 ODE No. 743

$$y'(x) = -\frac{i(x^4 + 8x^2y(x)^2 + 16y(x)^4 + 8ix)}{32y(x)}$$

✗ **Mathematica** : cpu = 46.9469 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == ((-I/32)*((8*I)*x + x^4 + 8*x^2*y[x]^2 + 16*y[x]^4))/y[x]

✓ **Maple** : cpu = 0.461 (sec), leaf count = 301

$$\left\{ y(x) = -i \sqrt{-i \left(-2_C1 (-\sqrt{3} + i) \text{Ai}^{(1)} \left(\frac{1}{2} (-\sqrt{3} + i) x \right) + (-2i + 2\sqrt{3}) \text{Bi}^{(1)} \left(\frac{(-\sqrt{3} + i) x}{2} \right) \right)} \right.$$

2.744 ODE No. 744

$$y'(x) = \frac{x}{x^4 + 2x^2y(x)^2 + y(x)^4 - y(x)}$$

✓ **Mathematica** : cpu = 0.0449882 (sec), leaf count = 510

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{144c_1x^2 + \sqrt{4(12x^2 - 4c_1^2)^3 + (144c_1x^2 + 16c_1^3 - 108)^2 + 16c_1^3 - 108}}}{6\sqrt[3]{2}} - \frac{1}{3 \cdot 2^{2/3} \sqrt[3]{144c_1x^2 - 108}} \right. \right.$$

✓ **Maple** : cpu = 0.201 (sec), leaf count = 621

$$\left\{ y(x) = -\frac{1}{12} \left(2_C1 \sqrt[3]{-36_C1 x^2 - 54 - _C1^3} + 6 \sqrt{48x^6 + 24x^4_C1^2 + (3_C1^4 + 108_C1)x^2} \right) \right.$$

2.745 ODE No. 745

$$y'(x) = \frac{(y(x) \log(x) - 1)^3}{x(-y(x) + y(x) \log(x) - 1)}$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.069 (sec), leaf count = 104

$$\left\{ y(x) = \frac{47 \operatorname{RootOf}\left(-27783 \int^{-Z} (2209 _a^3 - 9261 _a - 9261) d_a - 7 \ln(x) + 3 _C1\right) - 84}{47 \ln(x) \operatorname{RootOf}\left(-27783 \int^{-Z} (2209 _a^3 - 9261 _a + 9261) d_a - 7 \ln(x) + 3 _C1\right) - 84} \right.$$

2.746 ODE No. 746

$$y'(x) = -\frac{i(x^4 + 2x^2y(x)^2 + y(x)^4 + ix)}{y(x)}$$

✗ **Mathematica** : cpu = 45.6655 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == ((-I)*(I*x + x^4 + 2*x^2*y[x]^2 + y[x]^4))/y[x], y[x], x]

✓ **Maple** : cpu = 0.408 (sec), leaf count = 243

$$\left\{ y(x) = \frac{-i\sqrt{2}}{2 \operatorname{Ai}\left(-\sqrt[3]{-8ix}\right) _C1 + 2 \operatorname{Bi}\left(-\sqrt[3]{-8ix}\right)} \sqrt{-2i \left(\operatorname{Ai}\left(-\sqrt[3]{-8ix}\right) _C1 + \operatorname{Bi}\left(-\sqrt[3]{-8ix}\right) \right) \left(-\dots \right)} \right.$$

2.747 ODE No. 747

$$y'(x) = -\frac{y(x) \cot(x) (x^2 y(x) (-\log(2x)) + x \log(2x) + \tan(x))}{x}$$

✗ **Mathematica** : cpu = 299.999 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.25 (sec), leaf count = 69

$$\left\{ y(x) = 1e^{\int -\frac{x \ln(x) + x \ln(2) + \tan(x)}{x \tan(x)} dx} \left(\int -\frac{x(\ln(2) + \ln(x))}{\tan(x)} e^{\int -\frac{x \ln(x) + x \ln(2) + \tan(x)}{x \tan(x)} dx} dx + _C1 \right)^{-1} \right\}$$

2.748 ODE No. 748

$$y'(x) = \frac{y(x)(y(x) + x)}{x(y(x)^3 + x)}$$

✓ **Mathematica** : cpu = 0.301741 (sec), leaf count = 285

$$\left\{ \left\{ y(x) \rightarrow \frac{2\sqrt[3]{2}(c_1 + \log(x))}{\sqrt[3]{\sqrt{2916x^2 - 864(c_1 + \log(x))^3 + 54x}}} + \frac{\sqrt[3]{\sqrt{2916x^2 - 864(c_1 + \log(x))^3 + 54x}}}{3\sqrt[3]{2}} \right\}, \left\{ y(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.106 (sec), leaf count = 497

$$\left\{ y(x) = \frac{1}{3} \sqrt[3]{27x + 3\sqrt{-24_C1^3 - 72_C1^2 \ln(x) - 72_C1(\ln(x))^2 - 24(\ln(x))^3 + 81x^2}} - 3\sqrt[3]{27x} \right\}$$

2.749 ODE No. 749

$$y'(x) = \frac{x(x - y(x))^2(y(x) + x)^2}{y(x)}$$

✓ **Mathematica** : cpu = 0.105158 (sec), leaf count = 126

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

✓ **Maple** : cpu = 0.131 (sec), leaf count = 192

$$\left\{ y(x) = 1\sqrt{\left((x^2 + 1)e^{-\frac{x^2(x^2+2)}{2}} + _C1(x^2 - 1)e^{-\frac{x^2(x^2-2)}{2}} \right) \left(-C1e^{-\frac{x^2(x^2-2)}{2}} + e^{-\frac{x^2(x^2+2)}{2}} \right) \left(-C1e^{-\frac{x^2(x^2-2)}{2}} + e^{-\frac{x^2(x^2+2)}{2}} \right) \right\}$$

2.750 ODE No. 750

$$y'(x) = \frac{y(x)(x^2 + 3y(x)^2)}{x(6y(x)^2 + x)}$$

✓ **Mathematica** : cpu = 0.327682 (sec), leaf count = 72

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{x} \sqrt{W\left(\frac{6e^{2c_1+2x}}{x}\right)}}{\sqrt{6}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{x} \sqrt{W\left(\frac{6e^{2c_1+2x}}{x}\right)}}{\sqrt{6}} \right\} \right\}$$

✓ **Maple** : cpu = 0.258 (sec), leaf count = 49

$$\left\{ \left((y(x))^{-2} + 6x^{-1} \right)^{-1} = \frac{x}{54} \left(e^{\text{RootOf}\left(-e^{-z} \ln\left(\frac{e^{-z}+9}{2}\right)x\right) + 3_C1 e^{-z} + _Z e^{-z} + 2x e^{-z} + 9} \right) + 9 \right\}$$

2.751 ODE No. 751

$$y'(x) = \frac{y(x)(x^4 + x \log(y(x)) + \log(y(x)))}{x(x+1)}$$

✓ **Mathematica** : cpu = 0.070759 (sec), leaf count = 30

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

✓ **Maple** : cpu = 0.106 (sec), leaf count = 26

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

2.752 ODE No. 752

$$y'(x) = \frac{\cos(y(x))(x^3 \cos(y(x)) - x - 1)}{(x + 1)(x \sin(y(x)) - 1)}$$

✗ **Mathematica** : cpu = 31.4812 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == (Cos[y[x]]*(-1 - x + x^3*Cos[y[x]]))/((1 + x)*(-1 + x*Sin[y[x]])), y[x], x]

✓ **Maple** : cpu = 1.672 (sec), leaf count = 879

$$\left\{ y(x) = \arctan \left(-\frac{-2x^3 + 3x^2 + \dots}{4x^6 - 12x^5 + 24_C1 x^3 + 33x^4 - 24x^3 \ln(1+x) - 36_C1 x^2 - 36x^3 + 36x^2 \ln(1+x)} \right) \right\}$$

2.753 ODE No. 753

$$y'(x) = \frac{y(x) \log(y(x))(x^4 \log(y(x)) + x + 1)}{x(x + 1)}$$

✓ **Mathematica** : cpu = 0.0992661 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow \exp \left(-\frac{12x}{-12c_1 + 3x^4 - 4x^3 + 6x^2 - 12x + 12 \log(x + 1)} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.152 (sec), leaf count = 38

$$\left\{ y(x) = e^{-12 \frac{x}{3x^4 - 4x^3 + 6x^2 + 12 \ln(1+x) - 12_C1 - 12x}} \right\}$$

2.754 ODE No. 754

$$y'(x) = \frac{x^3 + xy(x)^2 + xy(x) + y(x)^3}{x^2}$$

✓ **Mathematica** : cpu = 0.0244826 (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 = 0.018 (sec), leaf count = 26

$$\left\{ y(x) = \text{RootOf} \left(-\int^{-Z} (_a^3 + _a^2 + 1)^{-1} d_a + x + _C1 \right) x \right\}$$

2.755 ODE No. 755

$$y'(x) = \frac{y(x)^{3/2}}{x^2 - 2xy(x) + y(x)^2 + y(x)^{3/2}}$$

✓ **Mathematica** : cpu = 0.182893 (sec), leaf count = 2633

$$\left\{ \left\{ y(x) \rightarrow \frac{2}{3}(x + e^{c_1} + 2e^{2c_1}) - \frac{1}{3}\sqrt[3]{x^3 + 3e^{c_1}x^2 - 12e^{2c_1}x^2 + 3e^{2c_1}x + 12e^{3c_1}x + 48e^{4c_1}x + e^{3c_1} - 30e^{4c_1}} \right. \right.$$

✓ **Maple** : cpu = 0.138 (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

$$y'(x) = \frac{x^6 + 2x^3y(x) + x^2y(x)^2 + y(x)^3}{x^4}$$

✓ **Mathematica** : cpu = 0.0736741 (sec), leaf count = 95

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{\frac{3y(x)}{x^4} + \frac{1}{x^2}}{\sqrt[3]{29}\sqrt[3]{\frac{1}{x^6}}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{1}{9} 29^{2/3} \left(\frac{1}{x^6} \right)^{2/3} x^5, y(x) \right]$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 37

$$\left\{ y(x) = \frac{\left(-3 + 29 \text{RootOf} \left(-81 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_a + x + 3_C1 \right) \right) x^2}{9} \right\}$$

2.757 ODE No. 757

$$y'(x) = \frac{x^3 + 2x^2 - 4xy(x) - 4x - 8}{2x^2 - 8y(x) + 4x - 8}$$

✓ **Mathematica** : cpu = 0.0264512 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow 2(W(-e^{c_1 - \frac{x}{4} - 1}) + 1) + \frac{1}{4}(x^2 + 2x - 4) \right\} \right\}$$

✓ **Maple** : cpu = 0.068 (sec), leaf count = 26

$$\left\{ y(x) = \frac{x^2}{4} + 2 \operatorname{lambertW}(1/2_C1 e^{-x/4} e^{-1/2}) + \frac{x}{2} + 1 \right\}$$

2.758 ODE No. 758

$$y'(x) = \frac{y(x)(x^3 y(x) + 2x + 2)}{(x + 1)(\log(y(x)) + 2x - 1)}$$

✓ **Mathematica** : cpu = 0.930356 (sec), leaf count = 459

$$\left\{ \left\{ y(x) \rightarrow \frac{6W\left(-\frac{1}{6}\sqrt[6]{e^{-12x}(6c_1 + 2x^3 - 3x^2 + 6x - 6\log(x+1))^6}\right)}{6c_1 + 2x^3 - 3x^2 + 6x - 6\log(x+1)} \right\}, \left\{ y(x) \rightarrow \frac{6W\left(\frac{1}{6}\sqrt[6]{e^{-12x}(6c_1 + 2x^3 - 3x^2 + 6x - 6\log(x+1))^6}\right)}{6c_1 + 2x^3 - 3x^2 + 6x - 6\log(x+1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.244 (sec), leaf count = 41

$$\left\{ y(x) = e^{-\operatorname{lambertW}\left(-\frac{(-2x^3 + 3x^2 + 6\ln(1+x) + 6_C1 - 6x)e^{-2x}}{6}\right) - 2x} \right\}$$

2.759 ODE No. 759

$$y'(x) = -\frac{ix(x^8 + 18x^4y(x)^2 + 54ix^2 + 81y(x)^4)}{243y(x)}$$

✗ **Mathematica** : cpu = 40.7661 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == ((-I/243)*x*((54*I)*x^2 + x^8 + 18*x^4*y[x]^2 + 81*y[x]^4)), y[x], x]

✓ **Maple** : cpu = 0.645 (sec), leaf count = 315

$$\left\{ y(x) = \frac{-\frac{1}{6} - \frac{i}{6}}{x} \sqrt{(1-i) \left(J_{\frac{1}{3}} \left(\left(\frac{2}{27} - \frac{2i}{27} \right) \sqrt{6}x^3 \right) - C1 + Y_{\frac{1}{3}} \left(\left(\frac{2}{27} - \frac{2i}{27} \right) \sqrt{6}x^3 \right) \right) \left((-27 - 27i - (1-i) \sqrt{6}x^3) \right)} \right.$$

2.760 ODE No. 760

$$y'(x) = \frac{(xy(x)^2 + 1)^3}{x^4y(x)(xy(x)^2 + x + 1)}$$

✓ **Mathematica** : cpu = 1.22033 (sec), leaf count = 112

$$\text{Solve} \left[2 \left(\frac{1}{10} \log(2x^2y(x)^4 + 2x^2y(x)^2 + x^2 + 4xy(x)^2 + 2x + 2) - \frac{1}{5} \log(xy(x)^2 - x + 1) - \frac{1}{10} \tan^{-1}(2x^2y(x)^2 - x + 1) \right) \right]$$

✓ **Maple** : cpu = 2.267 (sec), leaf count = 475

$$\left\{ \frac{\ln(x(y(x))^2 - x + 1)(y(x))^2}{5(y(x))^2 - 5} - \frac{\ln(x(y(x))^2 - x + 1)}{5(y(x))^2 - 5} - \frac{\ln(2x^2(y(x))^4 + 2x^2(y(x))^2 + 4x(y(x))^2 + x^2 + 2x + 2)}{10(y(x))^4 + 10(y(x))^2 + 5} \right.$$

2.761 ODE No. 761

$$y'(x) = \frac{-x^3 + 4x^2 - 4xy(x) - 4x + 8}{2x^2 + 8y(x) - 8x + 8}$$

✓ **Mathematica** : cpu = 0.0237246 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow W(-e^{c1-x-1}) + \frac{1}{4}(-x^2 + 4x - 4) + 1 \right\} \right\}$$

✓ **Maple** : cpu = 0.056 (sec), leaf count = 18

$$\left\{ y(x) = -\frac{x^2}{4} + \text{lambertW} \left(\frac{-C1}{e^x} \right) + x \right\}$$

2.762 ODE No. 762

$$y'(x) = -\frac{y(x)(x \log(y(x)) + \log(y(x)) - x)}{x(x+1)}$$

✓ **Mathematica** : cpu = 0.0554561 (sec), leaf count = 26

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

✓ **Maple** : cpu = 0.112 (sec), leaf count = 22

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

2.763 ODE No. 763

$$y'(x) = \frac{y(x)(x \log(y(x)) + \log(y(x)) + x)}{x(x+1)}$$

✓ **Mathematica** : cpu = 0.0563908 (sec), leaf count = 22

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

✓ **Maple** : cpu = 0.113 (sec), leaf count = 14

$$\left\{ y(x) = \left(\frac{C1 x}{1+x} \right)^x \right\}$$

2.764 ODE No. 764

$$y'(x) = \frac{y(x)(x^4 - x \log(y(x)) - \log(y(x)))}{x(x+1)}$$

✓ **Mathematica** : cpu = 0.0916089 (sec), leaf count = 50

$$\left\{ \left\{ y(x) \rightarrow (x+1)^{\frac{1}{x}} e^{-\frac{c_1}{x} + \frac{x^3}{4} - \frac{x^2}{3} + \frac{x}{2} - \frac{25}{12x} - 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.121 (sec), leaf count = 36

$$\left\{ y(x) = e^{\frac{x^3}{4}} e^{-\frac{x^2}{3}} e^{\frac{x}{2}} \sqrt{x+1} e^{-\frac{C1}{x}} e^{-1} \right\}$$

2.765 ODE No. 765

$$y'(x) = \frac{y(x) \left(xy(x) \log \left(\frac{(x-1)(x+1)}{x} \right) - \log \left(\frac{(x-1)(x+1)}{x} \right) - 1 \right)}{x}$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.196 (sec), leaf count = 106

$$\left\{ y(x) = \frac{e^{dilog(1+x)} x^{\ln(1+x)}}{e^{dilog(x)} x} e^{-\frac{(\ln(x))^2}{2}} \left(\int -\frac{e^{dilog(1+x)} x^{\ln(1+x)}}{e^{dilog(x)} x} e^{-\frac{(\ln(x))^2}{2}} \ln \left(\frac{(1+x)(x-1)}{x} \right) \left(x^{\ln \left(\frac{(1+x)(x-1)}{x} \right)} \right) \right) \right\}$$

2.766 ODE No. 766

$$y'(x) = \frac{y(x) \left(x^2 y(x) \log \left(\frac{(x-1)(x+1)}{x} \right) - x \log \left(\frac{(x-1)(x+1)}{x} \right) - \log(x) \right)}{x \log(x)}$$

✗ **Mathematica** : cpu = 300.026 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.239 (sec), leaf count = 85

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

2.767 ODE No. 767

$$y'(x) = \frac{-x^3 + 2x^2 - 8xy(x) - 8x + 32}{4x^2 + 32y(x) - 8x + 32}$$

✓ **Mathematica** : cpu = 0.0264332 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow 4(W(-e^{c_1 - \frac{x}{16}} - 1)) + 1 \right\} + \frac{1}{8}(-x^2 + 2x - 8) \right\}$$

✓ **Maple** : cpu = 0.061 (sec), leaf count = 26

$$\left\{ y(x) = -\frac{x^2}{8} + 4 \text{lambertW}(1/4_C1 e^{-x/16} e^{-3/4}) + \frac{x}{4} + 3 \right\}$$

2.768 ODE No. 768

$$y'(x) = \frac{y(x)(y(x) + 1)}{x(xy(x) - y(x) - 1)}$$

✓ **Mathematica** : cpu = 0.977923 (sec), leaf count = 66

$$\text{Solve} \left[\frac{2^{2/3} \left(xy(x) \left(-\log \left(\frac{xy(x)}{(x-1)y(x)-1} \right) + \log \left(\frac{y(x)+1}{-xy(x)+y(x)+1} \right) + \log(x) + 1 \right) - 1 \right)}{9xy(x)} = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.081 (sec), leaf count = 26

$$\left\{ y(x) = - \left(x \text{lambertW} \left(\frac{1}{x e^{x^{-1}} - C1} \right) + 1 \right)^{-1} \right\}$$

2.769 ODE No. 769

$$y'(x) = - \frac{ix(x^8 + 8x^4y(x)^2 + 16ix^2 + 16y(x)^4)}{32y(x)}$$

✗ **Mathematica** : cpu = 42.6293 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[1][y][x] == ((-I/32)*x*((16*I)*x^2 + x^8 + 8*x^4*y[x]^2 + 16*y[x]^4)`

✓ **Maple** : cpu = 0.483 (sec), leaf count = 251

$$\left\{ y(x) = - \frac{\sqrt{4}}{2x} \sqrt{\left(-2 - C1 (1/8 x^6 + i) J_{1/3} \left((1/3 - i/3) x^3 \right) + \left(-\frac{x^6}{4} - 2i \right) Y_{1/3} \left(\left(\frac{1}{3} - \frac{i}{3} \right) x^3 \right) + (1 + i) \right)} \right\}$$

2.770 ODE No. 770

$$y'(x) = \frac{2y(x)^6}{32x^2y(x)^4 + y(x)^3 + 16xy(x)^2 + 2}$$

✓ **Mathematica** : cpu = 0.125991 (sec), leaf count = 705

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{18432c_1^2x^2 + \sqrt{4(192c_1^2x - 12c_1 - 256x^2)^3 + (18432c_1^2x^2 - 2880c_1x + 8192x^3 + 108)^2} - 2}}{3\sqrt[3]{2}(1 - 16c_1x)} \right\} \right\}$$

✓ **Maple** : cpu = 0.132 (sec), leaf count = 1345

$$\left\{ y(x) = \frac{1}{3_C1 + 48x} \sqrt[3]{4096_C1^3 x^3 + 6\sqrt{3}\sqrt{4096_C1^4 x^3 + 27_C1^4 + 576x_C1^3 + 2048_C1^2 x^2}} \right.$$

2.771 ODE No. 771

$$y'(x) = \frac{-a^2 x^3 - 2abx^2 - 4axy(x) - 4ax + 8}{2ax^2 + 4bx + 8y(x) + 8}$$

✓ **Mathematica** : cpu = 0.0332051 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}(-ax^2 - 2bx - 4) - \frac{2\left(W\left(-e^{-\frac{b^2x}{4} + c_1 - 1}\right) + 1\right)}{b} \right\} \right\}$$

✓ **Maple** : cpu = 0.098 (sec), leaf count = 84

$$\left\{ y(x) = \frac{1}{4b} \left(-ax^2 b - 2b^2 x - 4b + 4e^{-1/4 \frac{1}{a} \left(b^2 x a + 2_C1 b^2 + 4 \text{lambertW} \left(-1/2 e^{-1/4 b^2 x} e^{-1/2 - \frac{C1 b^2}{a}} e^{-b/2} e^{-1} \right) \right)} \right) a + 2ab + 4 \right.$$

2.772 ODE No. 772

$$y'(x) = \frac{y(x) \log(y(x))(x \log(y(x)) + x + 1)}{x(x + 1)}$$

✓ **Mathematica** : cpu = 0.0635475 (sec), leaf count = 21

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

✓ **Maple** : cpu = 0.112 (sec), leaf count = 18

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

2.773 ODE No. 773

$$y'(x) = \frac{y(x)^2 + xy(x) + x}{(x-1)(y(x) + x)}$$

✓ **Mathematica** : cpu = 0.0476687 (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 = 0.207 (sec), leaf count = 48

$$\left\{ y(x) = \frac{\sqrt{3}x}{2} \tan \left(\text{RootOf} \left(-\sqrt{3} \ln \left(\frac{3x^2((\tan(_Z))^2 + 1)}{4(x-1)^2} \right) + 2\sqrt{3}_C1 - 2_Z \right) \right) - \frac{x}{2} \right\}$$

2.774 ODE No. 774

$$y'(x) = \frac{-2ax^2 - x^3 - 4xy(x) - 4x + 8}{4ax + 2x^2 + 8y(x) + 8}$$

✓ **Mathematica** : cpu = 0.0300452 (sec), leaf count = 45

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}(-2ax - x^2 - 4) - \frac{2 \left(W \left(-e^{-\frac{a^2x}{4} + c_1 - 1} \right) + 1 \right)}{a} \right\} \right\}$$

✓ **Maple** : cpu = 0.086 (sec), leaf count = 50

$$\left\{ y(x) = -\frac{1}{4a} \left(2a^2x + ax^2 + 8 \text{lambertW} \left(-1/2 e^{-1/4 a^2 x} e^{-a/2} e^{-1} e^{1/4 - C1 a^2} \right) + 4a + 8 \right) \right\}$$

2.775 ODE No. 775

$$y'(x) = \frac{-y(x) + \sqrt{y(x)} + x}{-y(x) + \sqrt{y(x)} + x + 1}$$

✓ **Mathematica** : cpu = 0.100343 (sec), leaf count = 943

$$\left\{ \{y(x) \rightarrow \text{Root}[x^6 - 2e^{3c_1}x^3 + e^{6c_1} + \#1^6 + (-6x - 6)\#1^5 + (15x^2 + 24x + 9)\#1^4 + (-20x^3 - 36x^2 -$$

✓ **Maple** : cpu = 0.085 (sec), leaf count = 60

$$\left\{ \sqrt{y(x) - 2\sqrt{y(x)} - xy(x)} + \sqrt{y(x) - 2\sqrt{y(x)} - x\sqrt{y(x)}} - \sqrt{y(x) - 2\sqrt{y(x)} - xx - C1} = 0 \right\}$$

2.776 ODE No. 776

$$y'(x) = \frac{y(x) \left(x^2 y(x) \log\left(\frac{x^2+1}{x}\right) - x \log\left(\frac{x^2+1}{x}\right) - \log\left(\frac{1}{x}\right) \right)}{x \log\left(\frac{1}{x}\right)}$$

✗ **Mathematica** : cpu = 300.03 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.873 (sec), leaf count = 92

$$\left\{ y(x) = 1e^{\int -\frac{1}{x \ln(x^{-1})} \left(\ln\left(\frac{x^2+1}{x}\right) x + \ln(x^{-1}) \right) dx} \left(\int -\frac{x}{\ln(x^{-1})} e^{\int -\frac{1}{x \ln(x^{-1})} \left(\ln\left(\frac{x^2+1}{x}\right) x + \ln(x^{-1}) \right) dx} \ln\left(\frac{x^2+1}{x}\right) dx + \right.$$

2.777 ODE No. 777

$$y'(x) = \frac{y(x)(y(x) + 1)}{x(xy(x)^4 - y(x) - 1)}$$

✓ **Mathematica** : cpu = 0.103724 (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 = 0.138 (sec), leaf count = 51

$$\left\{ y(x) = e^{\text{RootOf}\left(\left(e^{-Z}\right)^3 x - 5x\left(e^{-Z}\right)^2 + 2_{C1} x e^{-Z} + 2_{Z} x e^{-Z} + 7x e^{-Z} - 2_{C1} x - 2_{Z} x - 3x + 2\right) - 1} \right\}$$

2.778 ODE No. 778

$$y'(x) = \frac{x^9 y(x)^3 + x^6 y(x)^2 - 3x^2 y(x) + 1}{x^3}$$

✓ **Mathematica** : cpu = 0.0737109 (sec), leaf count = 95

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{3x^6 y(x) + x^3}{\sqrt[3]{29}\sqrt[3]{x^9}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{29^{2/3}(x^9)^{2/3}}{9x^5}, y(x) \right]$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 37

$$\left\{ y(x) = \frac{-3 + 29 \text{RootOf} \left(-81 \int^{-Z} (841 _a^3 - 27 _a + 27)^{-1} d_a + x + 3 _C1 \right)}{9x^3} \right\}$$

2.779 ODE No. 779

$$y'(x) = \frac{x^3 y(x) + x^3 + x y(x)^2 + y(x)^3}{(x-1)x^3}$$

✓ **Mathematica** : cpu = 0.0328931 (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 = 0.095 (sec), leaf count = 50

$$\left\{ \frac{1}{2} \ln \left(\frac{y(x) + x}{x} \right) - \frac{1}{4} \ln \left(\frac{(y(x))^2 + x^2}{x^2} \right) + \frac{1}{2} \arctan \left(\frac{y(x)}{x} \right) - \ln(x-1) + \ln(x) - _C1 = 0 \right\}$$

2.780 ODE No. 780

$$y'(x) = \frac{x\sqrt{x^2 + y(x)^2} + xy(x) + y(x)}{x(x+1)}$$

✓ **Mathematica** : cpu = 0.0259325 (sec), leaf count = 15

$$\{\{y(x) \rightarrow x \sinh(c_1 + \log(x+1))\}\}$$

✓ **Maple** : cpu = 0.379 (sec), leaf count = 27

$$\left\{-C1 + \frac{1}{x(1+x)} \left(y(x) + \sqrt{(y(x))^2 + x^2}\right) = 0\right\}$$

2.781 ODE No. 781

$$y'(x) = \frac{y(x)(x^4 + x^3 + 3y(x)^2 + x)}{x(6y(x)^2 + x)}$$

✓ **Mathematica** : cpu = 0.537919 (sec), leaf count = 82

$$\left\{\left\{y(x) \rightarrow -\frac{\sqrt{x}\sqrt{W\left(6xe^{2c_1+\frac{2x^3}{3}+x^2}\right)}}{\sqrt{6}}\right\}, \left\{y(x) \rightarrow \frac{\sqrt{x}\sqrt{W\left(6xe^{2c_1+\frac{2x^3}{3}+x^2}\right)}}{\sqrt{6}}\right\}\right\}$$

✓ **Maple** : cpu = 0.247 (sec), leaf count = 61

$$\left\{\left(\left(y(x)\right)^{-2} + 6x^{-1}\right)^{-1} = \frac{x}{54} \left(e^{\text{RootOf}\left(2x^3e^{-Z} + 3x^2e^{-Z} - 3e^{-Z} \ln\left(1/2 \frac{e^{-Z} + 9}{x}\right) + 9 - C1 e^{-Z} + 3 - Z e^{-Z} + 27\right)} + 9\right)\right\}$$

2.782 ODE No. 782

$$y'(x) = \frac{y(x) \coth\left(\frac{1}{x}\right) \left(x^2 y(x) \log\left(\frac{x^2+1}{x}\right) - x \log\left(\frac{x^2+1}{x}\right) - \tanh\left(\frac{1}{x}\right)\right)}{x}$$

✗ **Mathematica** : cpu = 300.09 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.51 (sec), leaf count = 92

$$\left\{ y(x) = 1 e^{\int -\frac{1}{x \tanh(x^{-1})} \left(\ln\left(\frac{x^2+1}{x}\right)x + \tanh(x^{-1})\right) dx} \left(\int -\frac{x}{\tanh(x^{-1})} e^{\int -\frac{1}{x \tanh(x^{-1})} \left(\ln\left(\frac{x^2+1}{x}\right)x + \tanh(x^{-1})\right) dx} \ln\left(\frac{x^2+1}{x}\right) dx + C1 \right) \right\}$$

2.783 ODE No. 783

$$y'(x) = -\frac{y(x) \coth(x) (x^2 y(x) (-\log(2x)) + x \log(2x) + \tanh(x))}{x}$$

✗ **Mathematica** : cpu = 300.041 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.191 (sec), leaf count = 69

$$\left\{ y(x) = 1 e^{\int -\frac{x \ln(x) + x \ln(2) + \tanh(x)}{x \tanh(x)} dx} \left(\int -\frac{x(\ln(2) + \ln(x))}{\tanh(x)} e^{\int -\frac{x \ln(x) + x \ln(2) + \tanh(x)}{x \tanh(x)} dx} dx + C1 \right)^{-1} \right\}$$

2.784 ODE No. 784

$$y'(x) = \operatorname{csch}(x) (x^2 \log(x) + 2xy(x) \log(x) + y(x)^2 \log(x) + \log(x) - \sinh(x))$$

✗ **Mathematica** : cpu = 300.049 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 31.79 (sec), leaf count = 24

$$\left\{ y(x) = -x - \tan\left(-C1 - \int \frac{\ln(x)}{\sinh(x)} dx\right) \right\}$$

2.785 ODE No. 785

$$y'(x) = \frac{x^2 \sinh(x) + 2xy(x) \sinh(x) + y(x)^2 \sinh(x) - \log(x) + \sinh(x)}{\log(x)}$$

✗ **Mathematica** : cpu = 300.046 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 101.522 (sec), leaf count = 24

$$\left\{ y(x) = -x - \tan \left(-C1 - \int \frac{\sinh(x)}{\ln(x)} dx \right) \right\}$$

2.786 ODE No. 786

$$y'(x) = \frac{axy(x)^2 \cosh(x) + bx^3 \cosh(x) + y(x) \log(x)}{x \log(x)}$$

✗ **Mathematica** : cpu = 300.043 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.067 (sec), leaf count = 39

$$\left\{ y(x) = \frac{x}{a} \tan \left(\int \frac{x \cosh(x)}{\ln(x)} dx \sqrt{ab} + -C1 \sqrt{ab} \right) \sqrt{ab} \right\}$$

2.787 ODE No. 787

$$y'(x) = \frac{x(2x^4 - 2x^2y(x) + x^2 - x - 1)}{(x + 1)(x^2 - y(x))}$$

✓ **Mathematica** : cpu = 27.2233 (sec), leaf count = 484

Solve

$$\left[2^{2/3} \left(2 - \frac{x(x^2-x-1)(2x^2-2y(x)+3)}{\sqrt[3]{x^3(x^2-x-1)^3(x^2-y(x))}} \right) \left(\frac{x(x^2-x-1)(2x^2-2y(x)+3)}{\sqrt[3]{x^3(x^2-x-1)^3(x^2-y(x))}} + 4 \right) \left(\left(1 - \frac{x(x^2-x-1)(2x^2-2y(x)+3)}{2\sqrt[3]{x^3(x^2-x-1)^3(x^2-y(x))}} \right) \log \right. \right.$$

$$\left. \left. 9 \left(-\frac{(2x^2-2y(x)+3)^3}{(x^2-y(x))^3} + \frac{12x(x^2-1)}{\sqrt[3]{x^3(x^2-x-1)^3}} \right) \right] \right.$$

✓ **Maple** : cpu = 0.335 (sec), leaf count = 191

$$\left\{ y(x) = 1 \left(4x^2 e^{\text{RootOf}\left(8x^3 e^{-Z} - 24x^2 e^{-Z} - 36x^3 + 6 \ln\left(\frac{2e^{-Z}-9}{(1+x)^4}\right) e^{-Z} + 18 - C1 e^{-Z} - 6 - Z e^{-Z} + 24xe^{-Z} + 108x^2 - 27 \ln\left(\frac{2e^{-Z}-9}{(1+x)^4}\right)\right)} \right) \right.$$

2.788 ODE No. 788

$$y'(x) = -\frac{y(x) (x^2 y(x) (-\coth(x+1)) + \log(x-1) + x \coth(x+1))}{x \log(x-1)}$$

✗ **Mathematica** : cpu = 300.001 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.512 (sec), leaf count = 106

$$\left\{ y(x) = 1 \left(e^{-\int -\frac{\ln(x-1) \sinh(1+x) + x \cosh(1+x)}{\sinh(1+x)x \ln(x-1)} dx} \right)^{-1} \left(-C1 + \int -\frac{x \cosh(1+x)}{\ln(x-1) \sinh(1+x)} e^{\int -\frac{\ln(x-1) \sinh(1+x) + x \cosh(1+x)}{\sinh(1+x)x \ln(x-1)} dx} \right)$$

2.789 ODE No. 789

$$y'(x) = \frac{x^2 \coth(x+1) + 2xy(x) \coth(x+1) + y(x)^2 \coth(x+1) - \log(x-1) + \coth(x+1)}{\log(x-1)}$$

✗ **Mathematica** : cpu = 300.003 (sec), leaf count = 0 , timed out

\$Aborted

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.790 ODE No. 790

$$y'(x) = \frac{x^4 \coth\left(\frac{x+1}{x-1}\right) - 2x^2 y(x) \coth\left(\frac{x+1}{x-1}\right) + y(x)^2 \coth\left(\frac{x+1}{x-1}\right) + 2x \log\left(\frac{1}{x-1}\right) - \coth\left(\frac{x+1}{x-1}\right)}{\log\left(\frac{1}{x-1}\right)}$$

✗ **Mathematica** : cpu = 300.002 (sec), leaf count = 0 , timed out

\$Aborted

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.791 ODE No. 791

$$y'(x) = \frac{\operatorname{sech}\left(\frac{1}{x-1}\right) \left(x^5 + x^4 - 2x^3y(x) - 2x^2y(x) + 2x^2 \cosh\left(\frac{1}{x-1}\right) + xy(x)^2 + y(x)^2 - x - 2x \cosh\left(\frac{1}{x-1}\right)\right)}{x-1}$$

✗ **Mathematica** : cpu = 300.004 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 18.086 (sec), leaf count = 634

$$\left\{ y(x) = 1 \left(x^2 \left(e^{\frac{C_1}{(e^{(x-1)^{-1}})^2 + 1}} e^{2(x-1)^{-1}} \right)^4 \left(e^{\frac{C_1}{(e^{(x-1)^{-1}})^2 + 1}} \right)^4 \left(e^{\frac{1}{(e^{(x-1)^{-1}})^2 + 1}} \int \left(\frac{e^{(x-1)^{-1}}}{1+x} + \frac{x}{e^{(x-1)^{-1}}(1+x)} - \frac{e^{(x-1)^{-1}}}{1+x} \right) dx \right) \right.$$

2.792 ODE No. 792

$$y'(x) = \frac{y(x)\operatorname{sech}\left(\frac{1}{x+1}\right) \left(x^3y(x) + x^2y(x) - x^2 - x - x \cosh\left(\frac{1}{x+1}\right) + \cosh\left(\frac{1}{x+1}\right)\right)}{(x-1)x}$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.613 (sec), leaf count = 114

$$\left\{ y(x) = 1 e^{\int -\frac{\cosh((1+x)^{-1})x+x^2-\cosh((1+x)^{-1})+x}{x(x-1)\cosh((1+x)^{-1})} dx} \left(\int -\frac{x(1+x)}{(x-1)\cosh((1+x)^{-1})} e^{\int -\frac{\cosh((1+x)^{-1})x+x^2-\cosh((1+x)^{-1})}{x(x-1)\cosh((1+x)^{-1})} dx} dx \right) \right.$$

2.793 ODE No. 793

$$y'(x) = -\frac{y(x)(xy(x) + 1)}{x(xy(x) - y(x) + 1)}$$

✓ **Mathematica** : cpu = 14.5007 (sec), leaf count = 399

$$\text{Solve} \left[\frac{\sqrt[3]{-2} \left(\frac{2^{2/3}((x-1)y(x)-2)}{\sqrt[3]{-\frac{1}{(x-1)^3}(x-1)((x-1)y(x)+1)}} + (-2)^{2/3} \right) \left(\frac{-xy(x)+y(x)+2}{\sqrt[3]{2} \sqrt[3]{-\frac{1}{(x-1)^3}(x-1)((x-1)y(x)+1)}} + (-2)^{2/3} \right) \left(\left(\frac{\sqrt[3]{-1}}{\sqrt[3]{-\frac{1}{(x-1)^3}}(x-1)} \right) \right)}{\dots} \right]$$

✓ **Maple** : cpu = 0.1 (sec), leaf count = 32

$$\left\{ y(x) = -2 \frac{1}{x} e^{-\text{lambertW}\left(-2 \frac{(x-1)(e^{-C1})^3 e^{-1}}{x}\right) + 3 - C1 - 1} \right\}$$

2.794 ODE No. 794

$$y'(x) = \frac{y(x)}{x(x^3 y(x)^4 + x^2 y(x)^3 + y(x) - 1)}$$

✓ **Mathematica** : cpu = 0.0883255 (sec), leaf count = 67

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

✓ **Maple** : cpu = 0.539 (sec), leaf count = 32

$$\left\{ -y(x) + \int^{xy(x)} \frac{1}{-a(-a^3 + -a^2 + 1)} d_a - C1 = 0 \right\}$$

2.795 ODE No. 795

$$y'(x) = \frac{a^3 + 3a^2 x + 3ax^2 + ay(x)^2 + x^3 + y(x)^3 + xy(x)^2}{(a+x)^3}$$

✓ **Mathematica** : cpu = 0.169265 (sec), leaf count = 111

$$\text{Solve}\left[-\frac{19}{3} \text{RootSum}\left[-19 \#1^3 + 6 \sqrt[3]{38} \#1 - 19 \&, \frac{\log\left(\frac{\frac{3y(x)}{(a+x)^3} + \frac{1}{(a+x)^2} - \#1\right)}{2 \sqrt[3]{38} - 19 \#1^2} \&\right] = \frac{1}{9} 38^{2/3} \left(\frac{1}{(a+x)^6}\right)^{2/3}\right]$$

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

$$\left\{ y(x) = -\text{RootOf}\left(-\int^{-Z} (-a^3 - a^2 - a - 1)^{-1} d_a + \ln(x+a) + C1\right) (x+a) \right\}$$

2.796 ODE No. 796

$$y'(x) = \frac{e^{-\frac{3x^2}{2}} xy(x)^3}{3 \left(e^{\frac{3x^2}{2}} y(x) + 3e^{\frac{3x^2}{2}} + 3y(x) \right)}$$

✓ **Mathematica** : cpu = 16.7138 (sec), leaf count = 102

$$\text{Solve} \left[\frac{1}{62} \left(-31 \log \left(9e^{\frac{3x^2}{2}} (y(x) + 3)y(x) + 3e^{3x^2} (y(x) + 3)^2 - y(x)^2 \right) + 6\sqrt{93} \tanh^{-1} \left(\frac{\sqrt{\frac{3}{31}} \left(2e^{\frac{3x^2}{2}} (y(x) + 3) + y(x) \right)}{y(x) + 3} \right) \right) \right]$$

✓ **Maple** : cpu = 1.272 (sec), leaf count = 143

$$\left\{ y(x) = \text{RootOf} \left(\left(7e^{3x^2 + \text{RootOf} \left((e^{3/2} x^2)^2 \left(42\sqrt{93} \tanh \left(\frac{(-C1-5-Z)\sqrt{93}}{90} \right) e^{3x^2+Z} + 217 \left(\tanh \left(\frac{(-C1-5-Z)\sqrt{93}}{90} \right) \right)^2 e^{3x^2+Z} + 1 \right)} \right) \right) \right)$$

2.797 ODE No. 797

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

✓ **Mathematica** : cpu = 2.09459 (sec), leaf count = 349

$$\left\{ \left\{ y(x) \rightarrow \frac{\exp \left(\frac{(3e^2-1)\text{Chi} \left(\frac{2}{x-1} \right)}{e} + \frac{(1+3e^2)\text{Shi} \left(\frac{2}{x-1} \right)}{e} - \frac{1}{4} e x^2 \sinh \left(\frac{2}{x-1} \right) + \frac{x^2 \sinh \left(\frac{2}{x-1} \right)}{4e} - \frac{1}{4} e x^2 \cosh \left(\frac{2}{x-1} \right) - \frac{x^2 \cosh \left(\frac{2}{x-1} \right)}{4e} \right)}{x \left(c_1 \exp \left(\frac{(x-1)(-x+e^2)}{e} \right) \right)} \right. \right.$$

✓ **Maple** : cpu = 0.334 (sec), leaf count = 281

$$\left\{ y(x) = \frac{1}{x} e^{-\frac{ex^2}{4}} e^{2(x-1)^{-1}} e^{\frac{5e}{4}} e^{2(x-1)^{-1}} e^{-\frac{e^{-1}x^2}{4}} e^{-2(x-1)^{-1}} e^{\frac{e^{-1}}{4}} e^{-2(x-1)^{-1}} e^{-1} Ei(1, 2(x-1)^{-1}) \left(e^{ee^{2(x-1)^{-1}} x} \right)^{-1} \left(e^{eEi(1, 2(x-1)^{-1})} \right)$$

2.798 ODE No. 798

$$y'(x) = \frac{y(x)(y(x) + x + 1)}{(x + 1)(2y(x)^3 + y(x) + x)}$$

✓ **Mathematica** : cpu = 0.609411 (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 = 0.143 (sec), leaf count = 30

$$\left\{ y(x) = e^{\text{RootOf}(- (e^{-Z})^3 + \ln(1+x)e^{-Z} + C1 e^{-Z} - Z e^{-Z} + x)} \right\}$$

2.799 ODE No. 799

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

✓ **Mathematica** : cpu = 0.309115 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow \frac{e^{6e\text{Ei}\left(\frac{2}{x-1}\right)}}{x \left(c_1 e^{\frac{1}{2} e^{\frac{x}{x-1} + \frac{1}{x-1}} (x^2 + 4x - 5)} + e^{6e\text{Ei}\left(\frac{2}{x-1}\right)} \right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.382 (sec), leaf count = 147

$$\left\{ y(x) = \frac{1}{x} e^{\frac{5}{2} e^{\frac{1+x}{x-1}}} e^{-\frac{x^2}{2} e^{\frac{1+x}{x-1}}} \left(e^{e\text{Ei}(1, -2(x-1)^{-1})} \right)^{-6} \left(e^{x e^{\frac{1+x}{x-1}}} \right)^{-2} \left(\int -(1+x) e^{\frac{1+x}{x-1}} e^{\frac{5}{2} e^{\frac{1+x}{x-1}}} e^{-\frac{x^2}{2} e^{\frac{1+x}{x-1}}} \left(e^{e\text{Ei}(1, -2(x-1)^{-1})} \right)^{-6} \right)$$

2.800 ODE No. 800

$$y'(x) = \frac{-b^3 + 6b^2x - 12bx^2 - 4by(x)^2 + 8x^3 + 8y(x)^3 + 8xy(x)^2}{(2x - b)^3}$$

✓ **Mathematica** : cpu = 0.189788 (sec), leaf count = 128

$$\text{Solve} \left[-\frac{19}{3} \text{RootSum} \left[-19\#1^3 + 6\sqrt[3]{38}\#1 - 19\&, \frac{\log \left(\frac{\frac{4}{(b-2x)^2} - \frac{24y(x)}{(b-2x)^3} - \#1}{4\sqrt[3]{38}\sqrt[3]{\frac{1}{(b-2x)^6}}} \right)}{2\sqrt[3]{38} - 19\#1^2} \& \right] = \frac{1}{9} 38^{2/3} \left(\frac{1}{(b-2x)^6} \right)^2 \right]$$

✓ **Maple** : cpu = 0.025 (sec), leaf count = 41

$$\left\{ y(x) = \frac{\text{RootOf} \left(-\int^{-Z} (_a^3 - _a^2 - _a - 1)^{-1} d_a + \ln(-2x + b) + _C1 \right) (-2x + b)}{2} \right\}$$

2.801 ODE No. 801

$$y'(x) = \frac{1}{2} e^{\frac{x^2}{4}} \left(2e^{-\frac{3x^2}{4}} y(x)^3 + 2e^{-\frac{x^2}{2}} y(x)^2 + e^{-\frac{x^2}{4}} xy(x) + 2 \right)$$

✓ **Mathematica** : cpu = 0.109739 (sec), leaf count = 126

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{3e^{-\frac{x^2}{2}} y(x) + e^{-\frac{x^2}{4}}}{\sqrt[3]{29}\sqrt[3]{e^{-\frac{3x^2}{4}}}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{1}{9} 29^{2/3} e^{\frac{x^2}{2}} \left(e^{-\frac{3x^2}{4}} \right) \right]$$

✓ **Maple** : cpu = 0.065 (sec), leaf count = 63

$$\left\{ y(x) = -\frac{1}{9} \left(3e^{-1/4x^2} e^{1/4x^2} - 29 \text{RootOf} \left(-81 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_a + x + 3_C1 \right) \right) \left(e^{-\frac{3x^2}{4}} \right) \right\}$$

2.802 ODE No. 802

$$y'(x) = \frac{-F1(y(x) + \frac{1}{x}) + \frac{1}{x}}{x}$$

✓ **Mathematica** : cpu = 0.0805441 (sec), leaf count = 98

$$\text{Solve} \left[\int_1^{y(x)} \frac{-F1(K[2] + \frac{1}{x}) \left(\int_1^x -\frac{-F1'(K[2] + \frac{1}{K[1]})}{K[1]^2 (-F1(K[2] + \frac{1}{K[1]}))^2} dK[1] \right) + 1}{-F1(K[2] + \frac{1}{x})} dK[2] + \int_1^x \left(\frac{1}{K[1]^2 - F1\left(\frac{1}{K[1]} + \dots\right)} \right) \right]$$

✓ **Maple** : cpu = 0.118 (sec), leaf count = 27

$$\left\{ y(x) = \frac{\text{RootOf}\left(-\ln(x) + \int^{-Z} (-F1(_a))^{-1} d_a + _C1\right) x - 1}{x} \right\}$$

2.803 ODE No. 803

$$y'(x) = \frac{-F1(y(x)^2 - 2 \log(x))}{x \sqrt{y(x)^2}}$$

✓ **Mathematica** : cpu = 0.0875959 (sec), leaf count = 634

$$\text{Solve} \left[\int_1^{y(x)} \left(- \int_1^x \left(\frac{2K[2] (-F1(K[2]^2 - 2 \log(K[1])))^2 - F1'(K[2]^2 - 2 \log(K[1]))}{K[1] (-F1(K[2]^2 - 2 \log(K[1])) - 1)^2 (-F1(K[2]^2 - 2 \log(K[1])) + 1)} + \frac{2K[2]}{K[1] (-F1(K[2]^2 - 2 \log(K[1])) + 1)} \right) \right) \right]$$

✓ **Maple** : cpu = 0.431 (sec), leaf count = 65

$$\left\{ y(x) = \sqrt{2 \ln(x) + 2 \text{RootOf}\left(\ln(x) - \int^{-Z} (-F1(2_a) - 1)^{-1} d_a + _C1\right)}, y(x) = -\sqrt{2 \ln(x) + 2 \dots} \right\}$$

2.804 ODE No. 804

$$y'(x) = \frac{\frac{1}{2}x^4 \cos(2y(x)) + \frac{x^4}{2} - \frac{1}{2}x \sin(2y(x)) - \frac{1}{2} \sin(2y(x))}{x(x+1)}$$

✓ **Mathematica** : cpu = 0.49815 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow \tan^{-1} \left(\frac{-12c_1 + 3x^4 - 4x^3 + 6x^2 - 12x + 12 \log(x+1) - 25}{12x} \right) \right\} \right\}$$

✓ **Maple** : cpu = 1.288 (sec), leaf count = 38

$$\left\{ y(x) = \arctan \left(\frac{3x^4 - 4x^3 + 6x^2 + 12 \ln(1+x) - 12_C1 - 12x}{12x} \right) \right\}$$

2.805 ODE No. 805

$$y'(x) = \frac{x^4 \sqrt{x^2 + y(x)^2} + xy(x) + y(x)}{x(x+1)}$$

✓ **Mathematica** : cpu = 0.0362919 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow x \sinh \left(\frac{1}{6} (6c_1 + 2x^3 - 3x^2 + 6x - 6 \log(x+1) + 11) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.603 (sec), leaf count = 42

$$\left\{ \ln \left(y(x) + \sqrt{(y(x))^2 + x^2} \right) - \frac{x^3}{3} + \frac{x^2}{2} - x + \ln(1+x) - \ln(x) - _C1 = 0 \right\}$$

2.806 ODE No. 806

$$y'(x) = \frac{-\frac{1}{2}x \sin(2y(x)) - \frac{1}{2} \sin(2y(x)) + \frac{1}{2}x \cos(2y(x)) + \frac{x}{2}}{x(x+1)}$$

✓ **Mathematica** : cpu = 0.278892 (sec), leaf count = 23

$$\left\{ \left\{ y(x) \rightarrow \tan^{-1} \left(\frac{-c_1 + x - \log(x+1) + 1}{x} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.709 (sec), leaf count = 22

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

2.807 ODE No. 807

$$y'(x) = -\frac{1}{-e^{y(x)}y(x) - F1(y(x) - \log(x)) - x}$$

✗ **Mathematica** : cpu = 1.87202 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == -(-x - E^y[x]*y[x]*_F1[-Log[x] + y[x]])^(-1), y[x], x]

✓ **Maple** : cpu = 0.717 (sec), leaf count = 43

$$\left\{ \frac{(\ln(x))^2}{2} - y(x) \ln(x) - \int^{y(x) - \ln(x)} \frac{-F1(-a) - a + e^{-a}}{-F1(-a)} da + C1 = 0 \right\}$$

2.808 ODE No. 808

$$y'(x) = \frac{(y(x) + 1)(2y(x) + 1)}{x(2xy(x) - 2y(x) + x - 2)}$$

✓ **Mathematica** : cpu = 1.36226 (sec), leaf count = 149

$$\text{Solve} \left[\frac{2^{2/3} \left(x \log \left(-\frac{6 \cdot 2^{2/3} (y(x)+1)}{2(x-1)y(x)+x-2} \right) - x \log \left(\frac{3 \cdot 2^{2/3} (2xy(x)+x)}{2(x-1)y(x)+x-2} \right) + 2xy(x) \left(\log \left(-\frac{6 \cdot 2^{2/3} (y(x)+1)}{2(x-1)y(x)+x-2} \right) - \log \left(\frac{3 \cdot 2^{2/3} (2xy(x)+x)}{2(x-1)y(x)+x-2} \right) \right) \right)}{9(2xy(x) + x)} \right]$$

✓ **Maple** : cpu = 0.101 (sec), leaf count = 44

$$\left\{ y(x) = -\frac{1}{2} \left(x \text{lambertW} \left(\frac{1}{xe^{x-1} C1} \right) + 2 \right) \left(x \text{lambertW} \left(\frac{1}{xe^{x-1} C1} \right) + 1 \right)^{-1} \right\}$$

2.809 ODE No. 809

$$y'(x) = \frac{64x^3 - 240x^2 + 64xy(x)^2 + 64y(x)^3 - 80y(x)^2 + 300x - 125}{(4x - 5)^3}$$

✓ **Mathematica** : cpu = 0.178649 (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 = 0.023 (sec), leaf count = 41

$$\left\{ y(x) = -\frac{\text{RootOf}\left(-\int^{-Z}(_a^3 - _a^2 - _a - 1)^{-1} d_a + \ln(4x - 5) + _C1\right)(4x - 5)}{4} \right\}$$

2.810 ODE No. 810

$$y'(x) = \frac{x^2 \log^2(x) + y(x)^2 + y(x) - 2xy(x) \log(x) + x}{x}$$

✓ **Mathematica** : cpu = 0.0173335 (sec), leaf count = 40

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

✓ **Maple** : cpu = 0.054 (sec), leaf count = 16

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

2.811 ODE No. 811

$$y'(x) = \frac{x^4 + x^3 e^{y(x)} + xy(x) + e^{y(x)}y(x) - x \log(e^{y(x)} + x) - e^{y(x)} \log(e^{y(x)} + x) + x}{x^2}$$

✓ **Mathematica** : cpu = 2.27775 (sec), leaf count = 33

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

✓ **Maple** : cpu = 2.292 (sec), leaf count = 32

$$\left\{ y(x) = \frac{x^3}{2} + _C1 x + \ln\left(-x\left(-1 + e^{\frac{x^3}{2}} e^{-C1 x}\right)^{-1}\right) \right\}$$

2.812 ODE No. 812

$$y'(x) = x^3 \sqrt{x^3 - 6y(x)} + \sqrt{x^3 - 6y(x)} + \frac{x^2}{2} + x^2 \sqrt{x^3 - 6y(x)}$$

✓ **Mathematica** : cpu = 0.32908 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{96} (72c_1x^4 + 96c_1x^3 + 288c_1x - 144c_1^2 - 9x^8 - 24x^7 - 16x^6 - 72x^5 - 96x^4 + 16x^3 - 144x^2) \right\} \right\}$$

✓ **Maple** : cpu = 0.428 (sec), leaf count = 32

$$\left\{ -\frac{1}{3} \sqrt{x^3 - 6y(x)} - \frac{x^4}{4} - \frac{x^3}{3} - x - _C1 = 0 \right\}$$

2.813 ODE No. 813

$$y'(x) = \frac{1}{2} \sqrt{a} (2\sqrt{ax^4 + 8y(x)} - \sqrt{ax^3} + 2x^3 \sqrt{ax^4 + 8y(x)} + 2x^2 \sqrt{ax^4 + 8y(x)})$$

✓ **Mathematica** : cpu = 0.492046 (sec), leaf count = 66

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{72} a (-72c_1x^4 - 96c_1x^3 - 288c_1x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 87x^4 + 144x^2) \right\} \right\}$$

✓ **Maple** : cpu = 0.452 (sec), leaf count = 38

$$\left\{ \frac{1}{4} \sqrt{ax^4 + 8y(x)} - \sqrt{a} \left(\frac{x^4}{4} + \frac{x^3}{3} + x \right) - _C1 = 0 \right\}$$

2.814 ODE No. 814

$$y'(x) = \frac{y(x) (x^7 y(x)^2 - 3x^3 y(x) - 3)}{x (x^3 y(x) + 1)}$$

✓ **Mathematica** : cpu = 0.0175982 (sec), leaf count = 72

$$\left\{ \left\{ \left\{ y(x) \rightarrow \frac{x}{\frac{\sqrt{x(c_1-2x)+x}}{\sqrt{\frac{1}{x^7}}} - x^4} \right\}, \left\{ y(x) \rightarrow -\frac{x}{\frac{\sqrt{x(c_1-2x)+x}}{\sqrt{\frac{1}{x^7}}} + x^4} \right\} \right\} \right\}$$

✓ **Maple** : cpu = 0.039 (sec), leaf count = 38

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

2.815 ODE No. 815

$$y'(x) = \frac{e^{3x^2} x(y(x) + 3)^3}{81 \left(e^{\frac{3x^2}{2}} y(x) + 3e^{\frac{3x^2}{2}} + 3y(x) \right)}$$

✓ **Mathematica** : cpu = 17.776 (sec), leaf count = 103

$$\text{Solve} \left[\frac{1}{186} \left(31 \log \left(-81e^{\frac{3x^2}{2}} (y(x) + 3)y(x) + e^{3x^2} (y(x) + 3)^2 - 243y(x)^2 \right) - 6\sqrt{93} \tanh^{-1} \left(\frac{2e^{\frac{3x^2}{2}} (y(x) + 3)}{9\sqrt{93}} \right) \right) \right]$$

✓ **Maple** : cpu = 1.001 (sec), leaf count = 202

$$\left\{ 5 \ln \left(\frac{100 \left(e^{3/2 x^2} \right)^2 (y(x))^2 + 600 \left(e^{3/2 x^2} \right)^2 y(x) - 8100 (y(x))^2 e^{3/2 x^2} + 900 \left(e^{3/2 x^2} \right)^2 - 24300 e^{3/2 x^2} y(x)}{189 \left(3e^{3/2 x^2} + e^{3/2 x^2} y(x) + 3y(x) \right)^2} \right) \right\}$$

2.816 ODE No. 816

$$y'(x) = \frac{x(x - y(x))^3(y(x) + x)^3}{y(x)(x^2 - y(x)^2 - 1)}$$

✓ **Mathematica** : cpu = 0.148597 (sec), leaf count = 74

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

✓ **Maple** : cpu = 0.901 (sec), leaf count = 307

$$\left\{ \int_{-b}^x \frac{(-a - y(x))^3 (y(x) + a)^3 - a}{-a^6 - 3a^4 (y(x))^2 + 3a^2 (y(x))^4 - (y(x))^6 - a^2 + (y(x))^2 + 1} d_a + \int^{y(x)} \frac{(-f^6 + 3f^4 x)}{d_a} \right\}$$

2.817 ODE No. 817

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

✓ **Mathematica** : cpu = 0.376801 (sec), leaf count = 63

$$\left\{ \left\{ y(x) \rightarrow -\sec^{-1} \left(\frac{-9c_1 - x^3 + 3x^3 \log(x)}{9 \log(x)} \right) \right\}, \left\{ y(x) \rightarrow \sec^{-1} \left(\frac{-9c_1 - x^3 + 3x^3 \log(x)}{9 \log(x)} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.786 (sec), leaf count = 27

$$\left\{ y(x) = \arccos \left(9 \frac{\ln(x)}{3x^3 \ln(x) - x^3 + 9_C1} \right) \right\}$$

2.818 ODE No. 818

$$y'(x) = \frac{y(x)}{x(xy(x)^4 + xy(x)^3 + xy(x) - 1)}$$

✓ **Mathematica** : cpu = 0.0497063 (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 = 0.142 (sec), leaf count = 34

$$\left\{ y(x) = e^{\text{RootOf}(-2x(e^{-Z})^4 - 3x(e^{-Z})^3 + 6_C1xe^{-Z} - 6_Zxe^{-Z} - 6)} \right\}$$

2.819 ODE No. 819

$$y'(x) = x^2 \sqrt{x^2 + 3y(x)} + \sqrt{x^2 + 3y(x)} + x^3 \sqrt{x^2 + 3y(x)} - \frac{2x}{3}$$

✓ **Mathematica** : cpu = 0.23122 (sec), leaf count = 65

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{192} (-72c_1x^4 - 96c_1x^3 - 288c_1x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 96x^4 + 80x^2) \right\} \right\}$$

✓ **Maple** : cpu = 0.385 (sec), leaf count = 32

$$\left\{ \frac{2}{3} \sqrt{x^2 + 3y(x)} - \frac{x^4}{4} - \frac{x^3}{3} - x - _C1 = 0 \right\}$$

2.820 ODE No. 820

$$y'(x) = \frac{\csc(y(x)) \left(\frac{1}{2}x^2 \log(x) \cos(2y(x)) + \frac{1}{2}x^2 \log(x) - \cos(y(x)) \right)}{x \log(x)}$$

✓ **Mathematica** : cpu = 0.335128 (sec), leaf count = 63

$$\left\{ \left\{ y(x) \rightarrow -\sec^{-1} \left(\frac{-4c_1 - x^2 + 2x^2 \log(x)}{4 \log(x)} \right) \right\}, \left\{ y(x) \rightarrow \sec^{-1} \left(\frac{-4c_1 - x^2 + 2x^2 \log(x)}{4 \log(x)} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.772 (sec), leaf count = 27

$$\left\{ y(x) = \arccos \left(4 \frac{\ln(x)}{2x^2 \ln(x) - x^2 + 4_C1} \right) \right\}$$

2.821 ODE No. 821

$$y'(x) = \frac{y(x)(xy(x) + 1)}{x(x^3y(x)^4 - xy(x) - 1)}$$

✓ **Mathematica** : cpu = 0.160938 (sec), leaf count = 2093

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{4} - \frac{1}{2} \sqrt{\frac{c_1^2}{4} + \frac{\sqrt[3]{1944c_1^2x^6 + 1458x^5 + \sqrt{(1944c_1^2x^6 + 1458x^5)^2 - 4(54c_1x^4 + 144x^3)^3}}}{18\sqrt[3]{2}x^3} + \frac{1}{x^3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.161 (sec), leaf count = 27

$$\left\{ -\frac{1}{3x^3(y(x))^3} - \frac{1}{2x^2(y(x))^2} - y(x) + _C1 = 0 \right\}$$

2.822 ODE No. 822

$$y'(x) = \frac{1}{4}x \left(-4e^{-x^2} x^2 y(x) - 4e^{-x^2} x^2 + 4e^{-x^2} + e^{-2x^2} x^4 + 4y(x)^2 \right)$$

✓ **Mathematica** : cpu = 0.0422283 (sec), leaf count = 32

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

✓ **Maple** : cpu = 0.128 (sec), leaf count = 25

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

2.823 ODE No. 823

$$y'(x) = \frac{y(x)(y(x) + x)}{x(y(x)^4 + y(x)^3 + y(x) + x)}$$

✓ **Mathematica** : cpu = 0.404496 (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 = 0.136 (sec), leaf count = 38

$$\left\{ y(x) = e^{\text{RootOf}(-2(e^{-Z})^4 - 3(e^{-Z})^3 + 6 \ln(x)e^{-Z} + 6 - C1 e^{-Z} - 6_Z e^{-Z} + 6x)} \right\}$$

2.824 ODE No. 824

$$y'(x) = \frac{y(x)(x^3 + x^2 y(x) + y(x)^2)}{(x-1)x^2(y(x) + x)}$$

✓ **Mathematica** : cpu = 0.0562513 (sec), leaf count = 68

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

✓ **Maple** : cpu = 0.404 (sec), leaf count = 61

$$\left\{ -\frac{1}{2} \ln \left(\frac{(y(x))^2 + xy(x) + x^2}{x^2} \right) + \frac{\sqrt{3}}{3} \arctan \left(\frac{(x + 2y(x)) \sqrt{3}}{3x} \right) + \ln \left(\frac{y(x)}{x} \right) - \ln(x - 1) + \ln(x) - \dots \right.$$

2.825 ODE No. 825

$$y'(x) = \frac{x(x^2y(x)^3 + (x^2 + 1)^{3/2}y(x)^2 + x^2(x^2 + 1)^{3/2} + (x^2 + 1)^{3/2} + y(x)^3)}{(x^2 + 1)^3}$$

✓ **Mathematica** : cpu = 0.206987 (sec), leaf count = 148

$$\text{Solve} \left[-\frac{19}{3} \text{RootSum} \left[-19\#1^3 + 6\sqrt[3]{38}\#1 - 19\&, \frac{\log \left(\frac{\frac{3xy(x)}{(x^2+1)^2} + \frac{x}{(x^2+1)^{3/2}}}{\sqrt[3]{38} \sqrt[3]{\frac{x^3}{(x^2+1)^{9/2}}}} - \#1 \right)}{2\sqrt[3]{38} - 19\#1^2} \& \right] = c_1 + \frac{19^{2/3} \left(\frac{x^3}{(x^2+1)^5} \right)}{18} \right]$$

✓ **Maple** : cpu = 0.107 (sec), leaf count = 89

$$\left\{ y(x) = \frac{19 \text{RootOf} \left(-1296 \int^{-Z} (361_a^3 - 432_a + 432)^{-1} d_a + 2 \ln(x^2 + 1) + 3_C1 \right) x^2 - 6x^2 + 1}{18} \right.$$

2.826 ODE No. 826

$$y'(x) = \frac{y(x)(3xy(x)^2 + 3y(x)^2 + x)}{x(x+1)(6y(x)^2 + x)}$$

✓ **Mathematica** : cpu = 0.621138 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{x} \sqrt{W \left(\frac{6e^{2c_1} x}{(x+1)^2} \right)}}{\sqrt{6}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{x} \sqrt{W \left(\frac{6e^{2c_1} x}{(x+1)^2} \right)}}{\sqrt{6}} \right\} \right\}$$

✓ **Maple** : cpu = 0.324 (sec), leaf count = 51

$$\left\{ \left((y(x))^{-2} + 6x^{-1} \right)^{-1} = \frac{x}{54} \left(e^{\text{RootOf}\left(-e^{-Z} \ln\left(\frac{(1+x)^2(e^{-Z}+9)}{2x}\right) + 3_C1 e^{-Z} + _Z e^{-Z} + 9\right)} + 9 \right) \right\}$$

2.827 ODE No. 827

$$y'(x) = \frac{x^2 y(x) \sqrt{x^2 + y(x)^2} + x^3 \left(-\sqrt{x^2 + y(x)^2}\right) + y(x)}{x}$$

✓ **Mathematica** : cpu = 0.125597 (sec), leaf count = 111

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

✓ **Maple** : cpu = 0.221 (sec), leaf count = 49

$$\left\{ \ln \left(2 \frac{x \left(\sqrt{2(y(x))^2 + 2x^2} + y(x) + x \right)}{y(x) - x} \right) + \frac{\sqrt{2}x^3}{3} - \ln(x) - _C1 = 0 \right\}$$

2.828 ODE No. 828

$$y'(x) = \frac{(y(x) + 1)(2y(x) + 1)}{x(2xy(x)^4 + xy(x)^3 - 2y(x) - 2)}$$

✓ **Mathematica** : cpu = 0.20988 (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 = 0.287 (sec), leaf count = 54

$$\left\{ y(x) = \frac{1}{2} e^{\text{RootOf}\left(x(e^{-Z})^3 - 8x(e^{-Z})^2 + 16 \ln(1/2 e^{-Z} + 1/2) x e^{-Z} + 8_C1 x e^{-Z} - 2_Z x e^{-Z} + 7e^{-Z} x + 16\right)} - \frac{1}{2} \right\}$$

2.829 ODE No. 829

$$y'(x) = \frac{x^6 \sqrt{4x^2 y(x) + 1} + x^5 \sqrt{4x^2 y(x) + 1} + x^3 \sqrt{4x^2 y(x) + 1} + \frac{1}{2}}{x^3}$$

✓ **Mathematica** : cpu = 0.383121 (sec), leaf count = 74

$$\left\{ \left\{ y(x) \rightarrow \frac{-160c_1 x^7 - 200c_1 x^6 - 400c_1 x^4 + 400c_1^2 x^2 + 16x^{12} + 40x^{11} + 25x^{10} + 80x^9 + 100x^8 + 100x^6 - 100x^4 - 100x^2 - 100}{400x^2} \right. \right.$$

✓ **Maple** : cpu = 0.434 (sec), leaf count = 40

$$\left\{ -C1 + \frac{1}{x} \left(-4x^6 - 5x^5 - 10x^3 + 10\sqrt{4x^2 y(x) + 1} \right) = 0 \right\}$$

2.830 ODE No. 830

$$y'(x) = \frac{(x - y(x))y(x)}{x(-y(x)^4 - y(x)^3 - y(x) + x)}$$

✓ **Mathematica** : cpu = 0.469376 (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 = 0.133 (sec), leaf count = 38

$$\left\{ y(x) = e^{\text{RootOf}(2(e^{-z})^4 + 3(e^{-z})^3 - 6\ln(x)e^{-z} + 6C1e^{-z} + 6ze^{-z} + 6x)} \right\}$$

2.831 ODE No. 831

$$y'(x) = \frac{x^3 \sqrt{4ax - y(x)^2} + x^2 \sqrt{4ax - y(x)^2} + \sqrt{4ax - y(x)^2} + 2a}{y(x)}$$

✓ **Mathematica** : cpu = 4.44133 (sec), leaf count = 145

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{12} \sqrt{576ax - 72c_1 x^4 - 96c_1 x^3 - 288c_1 x - 144c_1^2 - 9x^8 - 24x^7 - 16x^6 - 72x^5 - 96x^4 - 144x^3 - 144x^2 - 144x - 144} \right. \right.$$

✓ **Maple** : cpu = 0.343 (sec), leaf count = 35

$$\left\{ -\sqrt{-(y(x))^2 + 4ax} - \frac{x^4}{4} - \frac{x^3}{3} - x - C1 = 0 \right\}$$

2.832 ODE No. 832

$$y'(x) = \frac{y(x)(y(x) + x + 1)}{(x + 1)(y(x)^4 + y(x)^3 + y(x)^2 + x)}$$

✓ **Mathematica** : cpu = 3.3505 (sec), leaf count = 2497

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{2} \sqrt{\frac{3\sqrt[3]{2}(-8x + 3c_1)}{\sqrt[3]{1944(c_1 + \log(x + 1))^2 + 972(c_1 + \log(x + 1)) + 3726x} + \sqrt{(1944(c_1 + \log(x + 1))}} \right. \right.$$

✓ **Maple** : cpu = 0.194 (sec), leaf count = 31

$$\left\{ \ln(1 + x) + \frac{x}{y(x)} - \frac{(y(x))^3}{3} - \frac{(y(x))^2}{2} - y(x) + C1 = 0 \right\}$$

2.833 ODE No. 833

$$y'(x) = \frac{x^4(-\sqrt{x^2 + y(x)^2}) + x^3y(x)\sqrt{x^2 + y(x)^2} + y(x)}{x}$$

✓ **Mathematica** : cpu = 0.119721 (sec), leaf count = 105

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

✓ **Maple** : cpu = 0.17 (sec), leaf count = 49

$$\left\{ \ln \left(2 \frac{x \left(\sqrt{2(y(x))^2 + 2x^2 + y(x) + x} \right)}{y(x) - x} \right) + \frac{\sqrt{2}x^4}{4} - \ln(x) - C1 = 0 \right\}$$

2.834 ODE No. 834

$$y'(x) = \frac{y(x)(x^4 + 3xy(x)^2 + 3y(x)^2)}{x(x+1)(6y(x)^2 + x)}$$

✓ **Mathematica** : cpu = 0.77788 (sec), leaf count = 90

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{x} \sqrt{W\left(\frac{6(x+1)^2 e^{2c_1 + x^2 - 2x - 3}}{x}\right)}}{\sqrt{6}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{x} \sqrt{W\left(\frac{6(x+1)^2 e^{2c_1 + x^2 - 2x - 3}}{x}\right)}}{\sqrt{6}} \right\} \right\}$$

✓ **Maple** : cpu = 0.322 (sec), leaf count = 60

$$\left\{ \left((y(x))^{-2} + 6x^{-1} \right)^{-1} = \frac{x}{54} \left(e^{\text{RootOf}\left(x^2 e^{-Z} - e^{-Z} \ln\left(\frac{x(e^{-Z} + 9)}{2(1+x)^2}\right) + 3_C1 e^{-Z} + _Z e^{-Z} - 2e^{-Z} x + 9\right)} + 9 \right) \right\}$$

2.835 ODE No. 835

$$y'(x) = -\frac{1}{x \left(-\sqrt[3]{y(x)^3} \right) _F1(y(x)^3 - 3 \log(x)) - x (y(x)^3)^{2/3}}$$

✗ **Mathematica** : cpu = 2.63584 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[1][y][x] == -(-(x*(y[x]^3)^(2/3)) - x*(y[x]^3)^(1/3))*_F1[-3*Log[x] + y[x]^3])^(-1), y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x), x) = -1/(-(y(x)^3)^(2/3)*x - _F1(y(x)^3 - 3*ln(x))*(y(x)^3)^(1/3)*x), y(x))`

2.836 ODE No. 836

$$y'(x) = \frac{(x - y(x))y(x)(y(x) + 1)}{x(xy(x) - y(x) + x)}$$

✓ **Mathematica** : cpu = 12.5726 (sec), leaf count = 379

$$\text{Solve} \left[\frac{1}{9} 2^{2/3} \left(\frac{\left(1 - \frac{(x-1)^2 \left(\frac{x^6}{(x-1)^3} \right)^{2/3} ((x+2)y(x)+x)}{x^4 ((x-1)y(x)+x)} \right) \left(\frac{\left(\frac{x^6}{(x-1)^3} \right)^{2/3} (x-1)^2 ((x+2)y(x)+x)}{x^4 ((x-1)y(x)+x)} + 2 \right) \left(\left(1 - \frac{(x-1)^2 \left(\frac{x^6}{(x-1)^3} \right)^{2/3}}{x^4 ((x-1)y(x)+x)} \right) \right)}{\right. \right]$$

✓ **Maple** : cpu = 0.208 (sec), leaf count = 102

$$\left\{ y(x) = -x e^{\text{RootOf}\left(-\ln\left(\frac{e^{-Z}}{2} + \frac{9}{2}\right)e^{-Z} + 3_C1 e^{-Z} +_Z e^{-Z} - e^{-Z} x + 9\right)} \left(e^{\text{RootOf}\left(-\ln\left(\frac{e^{-Z}}{2} + \frac{9}{2}\right)e^{-Z} + 3_C1 e^{-Z} +_Z e^{-Z} - e^{-Z} x + 9\right)} \right)$$

2.837 ODE No. 837

$$y'(x) = -\frac{1}{-\sqrt[3]{y(x)^3} \log(x) _F1(3\text{Ei}(-\log(x)) + y(x)^3) - (y(x)^3)^{2/3} \log(x)}$$

✗ **Mathematica** : cpu = 3.23601 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[1][y][x] == -(-Log[x]*(y[x]^3)^(2/3)) - Log[x]*(y[x]^3)^(1/3)*_F1[3Log[x]] + y[x]^3]^(-1), y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x) = -1/(-ln(x)*(y(x)^3)^(2/3)-_F1(y(x)^3+3*Ei(1,-ln(x)))*ln(x))*(y(x)`

2.838 ODE No. 838

$$y'(x) = \frac{\frac{8x^{7/2}}{5} + \frac{4x^6}{25} - \frac{4}{5}x^3y(x) + \frac{6x^3}{5} - 4\sqrt{x}y(x) + y(x)^2 + 4x + \sqrt{x}}{x}$$

✓ **Mathematica** : cpu = 0.0296584 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{c_1 - \log(x)} + \frac{2}{5}\sqrt{x}(x^{5/2} + 5) \right\} \right\}$$

✓ **Maple** : cpu = 0.104 (sec), leaf count = 27

$$\left\{ y(x) = -\frac{x}{2} \left(-\frac{4x^2}{5} - 4\frac{1}{\sqrt{x}} \right) + (_C1 - \ln(x))^{-1} \right\}$$

2.839 ODE No. 839

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

✓ **Mathematica** : cpu = 0.075339 (sec), leaf count = 28

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

✓ **Maple** : cpu = 0.08 (sec), leaf count = 19

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

2.840 ODE No. 840

$$y'(x) = \frac{e^{\frac{y(x)}{x}} \left(x^3 + x e^{-\frac{y(x)}{x}} + e^{-\frac{y(x)}{x}} y(x) \right)}{x}$$

✓ **Mathematica** : cpu = 0.0893261 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow -x \log \left(\frac{e^{3c_1}}{3x} - \frac{x^2}{3} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.073 (sec), leaf count = 19

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

2.841 ODE No. 841

$$y'(x) = \frac{-2a^{3/2}bx^2y(x)^2 + 2a^{3/2}cy(x)^2 + a^{5/2}y(x)^4 + \sqrt{ab^2}x^4 - 2\sqrt{abc}x^2 + \sqrt{ac^2} + bx^3}{ax^2y(x)}$$

✓ **Mathematica** : cpu = 1.36392 (sec), leaf count = 236

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{2a^{5/2}bx^2 - 2a^{5/2}c + 4a^3b^2x^3 - 4a^3bcx + a^2x + 4\sqrt{ab^2}c_1x^2 - 4\sqrt{abcc_1} + 2bc_1x}}{\sqrt{2}\sqrt{2a^{3/2}bc_1 + a^{7/2} + 2a^4bx}} \right\} \right\}, \left\{ y(x) \rightarrow \dots \right\}$$

✓ **Maple** : cpu = 0.319 (sec), leaf count = 97

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

2.842 ODE No. 842

$$y'(x) = \frac{2x^2 y(x) \log^2(x) + x^2 y(x)^2 \log(x) + x^2 \log^3(x) + y(x)}{x \log(x)}$$

✓ **Mathematica** : cpu = 0.121871 (sec), leaf count = 186

$$\left\{ \left\{ y(x) \rightarrow -\frac{c_1 e^{\frac{1}{4} x^2 (2 \log(x) - 1)} \left(\frac{x}{2} + \frac{1}{2} x (2 \log(x) - 1) \right) + \frac{1}{4} x^2 e^{\frac{1}{4} x^2 (2 \log(x) - 1)} (2 \log(x) - 1) \left(\frac{x}{2} + \frac{1}{2} x (2 \log(x) - 1) \right)}{x \left(c_1 e^{\frac{1}{4} x^2 (2 \log(x) - 1)} + \frac{1}{4} x^2 e^{\frac{1}{4} x^2 (2 \log(x) - 1)} (2 \log(x) - 1) \right)} \right. \right.$$

✓ **Maple** : cpu = 0.028 (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

$$y'(x) = \frac{2x^3 y(x) \log^2(x) + x^3 y(x)^2 \log(x) + x^3 \log^3(x) + y(x)}{x \log(x)}$$

✓ **Mathematica** : cpu = 0.125893 (sec), leaf count = 198

$$\left\{ \left\{ y(x) \rightarrow -\frac{c_1 e^{\frac{1}{9} x^3 (3 \log(x) - 1)} \left(\frac{x^2}{3} + \frac{1}{3} x^2 (3 \log(x) - 1) \right) + \frac{1}{9} x^3 e^{\frac{1}{9} x^3 (3 \log(x) - 1)} (3 \log(x) - 1) \left(\frac{x^2}{3} + \frac{1}{3} x^2 (3 \log(x) - 1) \right)}{x^2 \left(c_1 e^{\frac{1}{9} x^3 (3 \log(x) - 1)} + \frac{1}{9} x^3 e^{\frac{1}{9} x^3 (3 \log(x) - 1)} (3 \log(x) - 1) \right)} \right. \right.$$

✓ **Maple** : cpu = 0.025 (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

$$y'(x) = \frac{y(x)(y(x) + 1)(y(x) + x)}{x(xy(x) + y(x) + x)}$$

✓ **Mathematica** : cpu = 15.473 (sec), leaf count = 386

Solve $\left[\frac{2^{2/3} \left(1 - \frac{\left(\frac{x^6}{(x+1)^3}\right)^{2/3} (x+1)^2 ((x-2)y(x)+x)}{x^4((x+1)y(x)+x)} \right) \left(\frac{\left(\frac{x^6}{(x+1)^3}\right)^{2/3} (x+1)^2 ((x-2)y(x)+x)}{x^4((x+1)y(x)+x)} + 2 \right)}{\left(1 - \frac{\left(\frac{x^6}{(x+1)^3}\right)^{2/3} (x+1)^2 ((x-2)y(x)+x)}{x^4((x+1)y(x)+x)} \right)} \right]$ 9

✓ **Maple** : cpu = 0.18 (sec), leaf count = 97

$$\left\{ y(x) = -xe^{\text{RootOf}\left(-\ln\left(\frac{e^{-Z}}{2} + \frac{9}{2}\right)e^{-Z} + 3 - C1 e^{-Z} + Z e^{-Z} + e^{-Z} x + 9\right)} \left(e^{\text{RootOf}\left(-\ln\left(\frac{e^{-Z}}{2} + \frac{9}{2}\right)e^{-Z} + 3 - C1 e^{-Z} + Z e^{-Z} + e^{-Z} x + 9\right)} \right) \right.$$

2.845 ODE No. 845

$$y'(x) = \frac{\sqrt{4y(x)^3 - 9x^4} + 3x^3 + x^3 \sqrt{4y(x)^3 - 9x^4} + x^2 \sqrt{4y(x)^3 - 9x^4}}{y(x)^2}$$

✓ **Mathematica** : cpu = 5.27388 (sec), leaf count = 227

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{2} \sqrt[3]{-\frac{1}{2} \sqrt[3]{72c_1 x^4 + 96c_1 x^3 + 288c_1 x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 132x^4 + 144x^2}} \right\} \right.$$

✓ **Maple** : cpu = 0.262 (sec), leaf count = 44

$$\left\{ \int_{-b}^{y(x)} -a^2 \frac{1}{\sqrt{-9x^4 + 4a^3}} dx - a - \frac{x^4}{4} - \frac{x^3}{3} - x - C1 = 0 \right\}$$

2.846 ODE No. 846

$$y'(x) = \frac{1}{x^2 \left(-\left(\frac{1}{y(x)} + 1\right) \right) {}_2F_1\left(x \left(\frac{1}{y(x)} + 1\right)\right) + x^2 {}_2F_1\left(x \left(\frac{1}{y(x)} + 1\right)\right) + x \left(\frac{1}{y(x)} + 1\right) - x}$$

✓ **Mathematica** : cpu = 1.44953 (sec), leaf count = 362

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{x {}_2F_1\left(x \left(\frac{1}{K[2]} + 1\right)\right) - 1}{x K[2] {}_2F_1\left(x \left(\frac{1}{K[2]} + 1\right)\right) + x {}_2F_1\left(x \left(\frac{1}{K[2]} + 1\right)\right) - K[2]} \right) dx - \int_1^x \left(\frac{-\frac{K[1] {}_2F_1\left(K[1] \left(\frac{1}{K[2]} + 1\right)\right)}{K[2]}}{K[1] \left(K[2] {}_2F_1\left(K[1] \left(\frac{1}{K[2]} + 1\right)\right) \right)} \right) dx \right]$$

✓ **Maple** : cpu = 0.191 (sec), leaf count = 40

$$\left\{ y(x) = e^{\text{RootOf}\left(-Z - \int \frac{e^{-Z} x}{e^{-Z} - 1} \frac{1}{({}_2F_1(-a)_{-a-1})_{-a}} d_{-a} + C1\right)} - 1 \right\}$$

2.847 ODE No. 847

$$y'(x) = x^2 \sqrt{x^2 - 4y(x) + 2x + 1} + \sqrt{x^2 - 4y(x) + 2x + 1} + x^3 \sqrt{x^2 - 4y(x) + 2x + 1} + \frac{x}{2} + \frac{1}{2}$$

✓ **Mathematica** : cpu = 0.365323 (sec), leaf count = 69

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{144} (72c_1 x^4 + 96c_1 x^3 + 288c_1 x - 144c_1^2 - 9x^8 - 24x^7 - 16x^6 - 72x^5 - 96x^4 - 108x^2 + 72x + \dots) \right\} \right\}$$

✓ **Maple** : cpu = 0.398 (sec), leaf count = 36

$$\left\{ -\frac{1}{2} \sqrt{x^2 + 2x + 1 - 4y(x)} - \frac{x^4}{4} - \frac{x^3}{3} - x - C1 = 0 \right\}$$

2.848 ODE No. 848

$$y'(x) = _F1(y(x) - \log(\sinh(x))) + \coth(x)$$

✓ **Mathematica** : cpu = 0.114482 (sec), leaf count = 154

$$\text{Solve} \left[\int_1^{y(x)} \frac{_F1(K[2] - \log(\sinh(x))) \left(\int_1^x \left(\frac{_F1'(K[2] - \log(\sinh(K[1]))(_F1(K[2] - \log(\sinh(K[1])) + \coth(K[1]))}{(_F1(K[2] - \log(\sinh(K[1]))))^2} - \frac{_F1(K[2] - \log(\sinh(K[1]))}{_F1(K[2] - \log(\sinh(K[1]))} \right)}{_F1(K[2] - \log(\sinh(x)))} \right. \right.$$

✓ **Maple** : cpu = 0.637 (sec), leaf count = 27

$$\left\{ \int_{-b}^{y(x)} (_F1(_a - \ln(\sinh(x))))^{-1} d_a - x - _C1 = 0 \right\}$$

2.849 ODE No. 849

$$y'(x) = x^2 \sqrt{x^2 + 4y(x) - 4x} + \sqrt{x^2 + 4y(x) - 4x} + x^3 \sqrt{x^2 + 4y(x) - 4x} - \frac{x}{2} + 1$$

✓ **Mathematica** : cpu = 0.327627 (sec), leaf count = 68

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{144} (-72c_1x^4 - 96c_1x^3 - 288c_1x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 96x^4 + 108x^2 + 144x) \right. \right.$$

✓ **Maple** : cpu = 0.381 (sec), leaf count = 35

$$\left\{ \frac{1}{2} \sqrt{x^2 - 4x + 4y(x)} - \frac{x^4}{4} - \frac{x^3}{3} - x - _C1 = 0 \right\}$$

2.850 ODE No. 850

$$y'(x) = _F1(y(x) - \log(\sin(x)) + \log(\cos(x) + 1)) + \csc(x)$$

✓ **Mathematica** : cpu = 0.202899 (sec), leaf count = 1478

$$\text{Solve} \left[\int_1^{y(x)} \frac{\sin(x) \left(\left(\int_1^x \left(\frac{(\cot^2(K[1]) + \csc(K[1]) \cot(K[1]) + 1) \sin(K[1]) (\csc(K[1]) + _F1(K[2] + \log(\cos(K[1]) + 1) - \log(\sin(K[1])))}{(-\cot^2(K[1]) + _F1(K[2] + \log(\cos(K[1]) + 1) - \log(\sin(K[1]))) \cot(K[1])} \right)}{\sin(x)} \right. \right. \right.$$

✓ **Maple** : cpu = 1.202 (sec), leaf count = 32

$$\left\{ \int_{-b}^{y(x)} ({}_F1(_a - \ln(\sin(x)) + \ln(\cos(x) + 1)))^{-1} d_a - x - {}_C1 = 0 \right\}$$

2.851 ODE No. 851

$$y'(x) = \frac{a^3x^3 + 3a^2bx^2y(x) + a^2bx^2 + 3ab^2xy(x)^2 + 2ab^2xy(x) + b^3y(x)^3 + b^3y(x)^2 + b^3}{b^3}$$

✓ **Mathematica** : cpu = 0.171457 (sec), leaf count = 145

$$\text{Solve} \left[-\frac{1}{3}(27a + 29b)^{2/3} \text{RootSum} \left[\#1^3(27a + 29b)^{2/3} - 3\#1b^{2/3} + (27a + 29b)^{2/3} \&, \frac{\log \left(\frac{3ax+b+3y(x)}{\sqrt[3]{\frac{27a+29b}{b}}} - \frac{1}{b^{2/3}} - \#1^2(27a + 29b)^{2/3} \right)}{b^{2/3} - \#1^2(27a + 29b)^{2/3}} \right], \right]$$

✓ **Maple** : cpu = 0.068 (sec), leaf count = 42

$$\left\{ y(x) = \frac{\text{RootOf} \left(\int^{-Z} (_a^3b + _a^2b + a + b)^{-1} d_ab - x + {}_C1 \right) b - ax}{b} \right\}$$

2.852 ODE No. 852

$$y'(x) = \frac{\alpha^3y(x)^3 + \alpha^3y(x)^2 + \alpha^3 + 3\alpha^2\beta xy(x)^2 + 2\alpha^2\beta xy(x) + 3\alpha\beta^2x^2y(x) + \alpha\beta^2x^2 + \beta^3x^3}{\alpha^3}$$

✓ **Mathematica** : cpu = 0.160411 (sec), leaf count = 145

$$\text{Solve} \left[-\frac{1}{3}(29\alpha + 27\beta)^{2/3} \text{RootSum} \left[\#1^3(29\alpha + 27\beta)^{2/3} - 3\#1\alpha^{2/3} + (29\alpha + 27\beta)^{2/3} \&, \frac{\log \left(\frac{\alpha+3\beta x+3y(x)}{\sqrt[3]{\frac{29\alpha+27\beta}{\alpha}}} - \frac{1}{\alpha^{2/3}} - \#1^2(29\alpha + 27\beta)^{2/3} \right)}{\alpha^{2/3} - \#1^2(29\alpha + 27\beta)^{2/3}} \right], \right]$$

✓ **Maple** : cpu = 0.068 (sec), leaf count = 42

$$\left\{ y(x) = \frac{\text{RootOf} \left(\int^{-Z} (_a^3\alpha + _a^2\alpha + \alpha + \beta)^{-1} d_a\alpha - x + {}_C1 \right) \alpha - \beta x}{\alpha} \right\}$$

2.853 ODE No. 853

$$y'(x) = \frac{x^3 y(x)^3 + 6x^2 y(x)^2 + 14xy(x) + 2x + 12}{x^2(xy(x) + x + 2)}$$

✓ **Mathematica** : cpu = 0.020192 (sec), leaf count = 76

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{x^3 \left(\frac{1}{x^3} - \frac{1}{x^3 \sqrt{c_1 - 2x}} \right)} - \frac{x + 2}{x} \right\}, \left\{ y(x) \rightarrow \frac{1}{x^3 \left(\frac{1}{x^3 \sqrt{c_1 - 2x}} + \frac{1}{x^3} \right)} - \frac{x + 2}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.039 (sec), leaf count = 65

$$\left\{ y(x) = -\frac{1}{x} \left(2 \sqrt{-C_1 - 2x} - x - 2 \right) \left(\sqrt{-C_1 - 2x} - 1 \right)^{-1}, y(x) = -\frac{1}{x} \left(2 \sqrt{-C_1 - 2x} + x + 2 \right) \left(\sqrt{-C_1 - 2x} - 1 \right)^{-1} \right\}$$

2.854 ODE No. 854

$$y'(x) = \frac{y(x) (x^2 \log^2(y(x)) + 2x^2 \log(x) \log(y(x)) + x^2 \log^2(x) + \log(y(x)) + \log(x) - 1)}{x}$$

✗ **Mathematica** : cpu = 0.645052 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == ((-1 + Log[x] + x^2*Log[x]^2 + Log[y[x]] + 2*x^2*Log[x]*Log[y[x]] - 1)/x), y[x], x]

✓ **Maple** : cpu = 0.213 (sec), leaf count = 51

$$\left\{ y(x) = 1 \left(x^{\frac{x^3}{x^3+3-C_1}} \right)^{-1} \left(x^{\frac{C_1}{x^3+3-C_1}} \right)^{-3} \left(e^{\frac{x}{x^3+3-C_1}} \right)^{-3} \right\}$$

2.855 ODE No. 855

$$y'(x) = \frac{y(x) (x^3 \log^2(y(x)) + 2x^3 \log(x) \log(y(x)) + x^3 \log^2(x) + \log(y(x)) + \log(x) - 1)}{x}$$

✗ **Mathematica** : cpu = 0.704213 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == ((-1 + Log[x] + x^3*Log[x]^2 + Log[y[x]] + 2*x^3*Log[x]*Log[y[x]] - 1)/x), y[x], x]

✓ **Maple** : cpu = 0.213 (sec), leaf count = 51

$$\left\{ y(x) = 1 \left(x^{\frac{x^4}{x^4+4-C_1}} \right)^{-1} \left(x^{\frac{C_1}{x^4+4-C_1}} \right)^{-4} \left(e^{\frac{x}{x^4+4-C_1}} \right)^{-4} \right\}$$

2.856 ODE No. 856

$$y'(x) = -\frac{x(-_F1(y(x)^2 - 2x) - \frac{1}{x})}{\sqrt{y(x)^2}}$$

✓ **Mathematica** : cpu = 0.936716 (sec), leaf count = 100

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{\sqrt{K[2]^2}}{-_F1(K[2]^2 - 2x)} - \int_1^x \frac{2K[2]_F1'(K[2]^2 - 2K[1])}{(-_F1(K[2]^2 - 2K[1]))^2} dK[1] \right) dK[2] + \int_1^x \left(-\frac{1}{-_F1(y(x)^2 - 2x)} \right) dx \right]$$

✓ **Maple** : cpu = 0.296 (sec), leaf count = 65

$$\left\{ y(x) = \sqrt{2 \text{RootOf} \left(x^2 - 2 \int^{-Z} (-_F1(2_a))^{-1} d_a + 4_C1 \right)} + 2x, y(x) = -\sqrt{2 \text{RootOf} \left(x^2 - 2 \int^{-Z} (-_F1(2_a))^{-1} d_a + 4_C1 \right)} + 2x \right\}$$

2.857 ODE No. 857

$$y'(x) = x^2 \sqrt{x^2 + 8y(x) - 2x + 1} + \sqrt{x^2 + 8y(x) - 2x + 1} + x^3 \sqrt{x^2 + 8y(x) - 2x + 1} - \frac{x}{4} + \frac{1}{4}$$

✓ **Mathematica** : cpu = 0.341279 (sec), leaf count = 69

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{72} (-72c_1x^4 - 96c_1x^3 - 288c_1x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 96x^4 + 135x^2 + 18x - 72c_1^2) \right\} \right\}$$

✓ **Maple** : cpu = 0.392 (sec), leaf count = 36

$$\left\{ \frac{1}{4} \sqrt{x^2 - 2x + 1 + 8y(x)} - \frac{x^4}{4} - \frac{x^3}{3} - x - _C1 = 0 \right\}$$

2.858 ODE No. 858

$$y'(x) = \frac{a^3 y(x)^3 + a^3 y(x)^2 + a^3 + 3a^2 b x y(x)^2 + 2a^2 b x y(x) + 3ab^2 x^2 y(x) + ab^2 x^2 + b^3 x^3}{a^3}$$

✓ **Mathematica** : cpu = 0.167661 (sec), leaf count = 145

$$\text{Solve} \left[-\frac{1}{3}(29a + 27b)^{2/3} \text{RootSum} \left[\#1^3(29a + 27b)^{2/3} - 3\#1a^{2/3} + (29a + 27b)^{2/3} \& \right], \frac{\log \left(\frac{a+3bx+3y(x)}{\sqrt[3]{29a+27b}} - \frac{a}{\sqrt[3]{29a+27b}} \right)}{a^{2/3} - \#1^2(29a + 27b)^{2/3}} \right]$$

✓ **Maple** : cpu = 0.075 (sec), leaf count = 42

$$\left\{ y(x) = \frac{\text{RootOf} \left(\int^{-Z} (_a^3 a + _a^2 a + a + b)^{-1} d_a a - x + _C1 \right) a - bx}{a} \right\}$$

2.859 ODE No. 859

$$y'(x) = \frac{-F1(y(x)^2 - 2x) + x}{x \sqrt{y(x)^2}}$$

✓ **Mathematica** : cpu = 1.34129 (sec), leaf count = 102

$$\text{Solve} \left[\int_1^{y(x)} \left(\frac{\sqrt{K[2]^2}}{-F1(K[2]^2 - 2x)} - \int_1^x \frac{2K[2]_F1'(K[2]^2 - 2K[1])}{(-F1(K[2]^2 - 2K[1]))^2} dK[1] \right) dK[2] + \int_1^x \left(-\frac{1}{-F1(y(x)^2)} \right) \right]$$

✓ **Maple** : cpu = 0.293 (sec), leaf count = 63

$$\left\{ y(x) = \sqrt{2 \text{RootOf} \left(\ln(x) - \int^{-Z} (_F1(2_a))^{-1} d_a + 2_C1 \right) + 2x}, y(x) = -\sqrt{2 \text{RootOf} \left(\ln(x) - \int^{-Z} (_F1(2_a))^{-1} d_a + 2_C1 \right) + 2x} \right\}$$

2.860 ODE No. 860

$$y'(x) = \frac{\frac{1}{2}x^4 \cos(2y(x)) + \frac{x^4}{2} + \frac{1}{2}x^3 \cos(2y(x)) + \frac{x^3}{2} - \frac{1}{2} \sin(2y(x)) + \frac{1}{2}x \cos(2y(x)) + \frac{x}{2}}{x}$$

✓ **Mathematica** : cpu = 0.15078 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow \tan^{-1} \left(\frac{10c_1 + 4x^5 + 5x^4 + 10x^2}{20x} \right) \right\} \right\}$$

✓ **Maple** : cpu = 2.401 (sec), leaf count = 29

$$\left\{ y(x) = \arctan \left(\frac{4x^5 + 5x^4 + 10x^2 + 40_C1}{20x} \right) \right\}$$

2.861 ODE No. 861

$$y'(x) = -\frac{e^{-1/x} \left(-_F1 \left(e^{\frac{1}{x}} y(x) \right) - \frac{e^{\frac{1}{x}} y(x)}{x} \right)}{x}$$

✓ **Mathematica** : cpu = 1.86509 (sec), leaf count = 155

$$\text{Solve} \left[\int_1^{y(x)} \frac{_F1 \left(e^{\frac{1}{x}} K[2] \right) \left(\int_1^x \left(\frac{e^{\frac{1}{K[1]}}}{K[1]^2 _F1 \left(e^{\frac{1}{K[1]} K[2]} \right)} - \frac{e^{\frac{2}{K[1]} K[2]} _F1' \left(e^{\frac{1}{K[1]} K[2]} \right)}{K[1]^2 \left(_F1 \left(e^{\frac{1}{K[1]} K[2]} \right) \right)^2} \right) dK[1]}{_F1 \left(e^{\frac{1}{x}} K[2] \right)} + e^{\frac{1}{x}}}{_F1 \left(e^{\frac{1}{x}} K[2] \right)} dK[2] + \right.$$

✓ **Maple** : cpu = 0.178 (sec), leaf count = 26

$$\left\{ y(x) = \frac{\text{RootOf} \left(-\ln(x) + \int^{-Z} (_F1(_a))^{-1} d_a + _C1 \right)}{e^{x^{-1}}} \right\}$$

2.862 ODE No. 862

$$y'(x) = -\log(y(x) - 1) \left(\frac{\text{Ei}(-\log(y(x) - 1))}{x} - _F1(x) \right)$$

✗ **Mathematica** : cpu = 1.18077 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == -(Log[-1 + y[x]]*(ExpIntegralEi[-Log[-1 + y[x]]])/x - _F1

✓ **Maple** : cpu = 0.235 (sec), leaf count = 27

$$\left\{ y(x) = e^{\text{RootOf}\left(\int \frac{-F1(x)}{x} dx + _C1 x + \text{Ei}(1, -Z)\right)} + 1 \right\}$$

2.863 ODE No. 863

$$y'(x) = \frac{x\sqrt{x^2 + y(x)^2} + x^4\sqrt{x^2 + y(x)^2} + x^3\sqrt{x^2 + y(x)^2} + y(x)}{x}$$

✓ **Mathematica** : cpu = 0.036195 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow x \sinh \left(\frac{1}{12} (12c_1 + 3x^4 + 4x^3 + 12x) \right) \right\} \right\}$$

✓ **Maple** : cpu = 4.705 (sec), leaf count = 38

$$\left\{ \ln \left(y(x) + \sqrt{(y(x))^2 + x^2} \right) - \frac{x^4}{4} - \frac{x^3}{3} - x - \ln(x) - _C1 = 0 \right\}$$

2.864 ODE No. 864

$$y'(x) = \frac{e^{\frac{x^2}{4}} y(x) \left(2e^{-\frac{3x^2}{4}} y(x)^2 + e^{-\frac{x^2}{2}} x y(x) + e^{-\frac{x^2}{4}} x \right)}{2e^{-\frac{x^2}{4}} y(x) + 2}$$

✓ **Mathematica** : cpu = 0.0439594 (sec), leaf count = 137

$$\left\{ \left\{ y(x) \rightarrow \frac{2e^{\frac{x^2}{2}}}{\sqrt{2}\sqrt{2e^{\frac{x^2}{2}}(c_1 - 2x) + 2e^{\frac{x^2}{2}} - 2e^{\frac{x^2}{4}}}} \right\}, \left\{ y(x) \rightarrow -\frac{2e^{\frac{x^2}{2}}}{\sqrt{2}\sqrt{2e^{\frac{x^2}{2}}(c_1 - 2x) + 2e^{\frac{x^2}{2}} + 2e^{\frac{x^2}{4}}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.092 (sec), leaf count = 186

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

2.865 ODE No. 865

$$y'(x) = (1 - y(x)) \left(-f(x) + \frac{y(x) \log(y(x) - 1)}{x(1 - y(x)) \log(x)} - \frac{\log(y(x) - 1)}{x(1 - y(x)) \log(x)} \right)$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.223 (sec), leaf count = 23

$$\left\{ y(x) = e^{\int \frac{f(x)}{\ln(x)} dx \ln(x)} x^{-C1} + 1 \right\}$$

2.866 ODE No. 866

$$y'(x) = x^2 \sqrt{a^2 + 2ax + x^2 + 4y(x)} + \sqrt{a^2 + 2ax + x^2 + 4y(x)} + x^3 \sqrt{a^2 + 2ax + x^2 + 4y(x)} - \frac{a}{2} - \frac{x}{2}$$

✓ **Mathematica** : cpu = 0.481777 (sec), leaf count = 74

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{144} (-36a^2 - 72ax - 72c_1x^4 - 96c_1x^3 - 288c_1x + 144c_1^2 + 9x^8 + 24x^7 + 16x^6 + 72x^5 + 96x^4) \right. \right.$$

✓ **Maple** : cpu = 0.668 (sec), leaf count = 39

$$\left\{ \frac{1}{2} \sqrt{x^2 + 2ax + a^2 + 4y(x)} - \frac{x^4}{4} - \frac{x^3}{3} - x - _C1 = 0 \right\}$$

2.867 ODE No. 867

$$y'(x) = \frac{x^6}{27} + \frac{1}{3}x^4y(x) + \frac{x^4}{9} + x^2y(x)^2 + \frac{2}{3}x^2y(x) + y(x)^3 + y(x)^2 - \frac{2x}{3} + 1$$

✓ **Mathematica** : cpu = 0.0648902 (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 = 0.067 (sec), leaf count = 30

$$\left\{ y(x) = -\frac{x^2}{3} + \text{RootOf} \left(-x + \int^{-Z} (-a^3 + a^2 + 1)^{-1} da + _C1 \right) \right\}$$

2.868 ODE No. 868

$$y'(x) = -x^6 + 3x^4y(x) + x^4 - 3x^2y(x)^2 - 2x^2y(x) + y(x)^3 + y(x)^2 + 2x + 1$$

✓ **Mathematica** : cpu = 0.0478011 (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 = 0.065 (sec), leaf count = 28

$$\left\{ y(x) = x^2 + \text{RootOf} \left(-x + \int^{-Z} (-a^3 + a^2 + 1)^{-1} da + C1 \right) \right\}$$

2.869 ODE No. 869

$$y'(x) = \frac{2x^5 + 2x^4 - 2x^3y(x) + x^3 - 2x^2y(x) + 3x^2 - 2y(x) - x + 1}{x^2 - y(x)}$$

✓ **Mathematica** : cpu = 0.0373415 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(W \left(-e^{c_1+x^4+\frac{4x^3}{3}-2x^2+4x-1} \right) + 1 \right) + x^2 \right\} \right\}$$

✓ **Maple** : cpu = 0.076 (sec), leaf count = 37

$$\left\{ y(x) = x^2 + \frac{1}{2} \text{lambertW} \left(-2 \frac{e^{x^4} e^{4/3 x^3} C1 (e^x)^4 e^{-1}}{(e^{x^2})^2} \right) + \frac{1}{2} \right\}$$

2.870 ODE No. 870

$$y'(x) = \frac{e^{\frac{y(x)}{x}} \left(x^4 + x^3 + x e^{-\frac{y(x)}{x}} + e^{-\frac{y(x)}{x}} y(x) + x \right)}{x}$$

✓ **Mathematica** : cpu = 1.65671 (sec), leaf count = 35

$$\left\{ \left\{ y(x) \rightarrow -x \log \left(\frac{-c_1 - \frac{x^4}{4} - \frac{x^3}{3} - x}{x} \right) \right\} \right\}$$

✓ **Maple** : cpu = 1.09 (sec), leaf count = 30

$$\left\{ y(x) = -\ln\left(-\frac{3x^4 + 4x^3 + 12_C1 + 12x}{12x}\right) x \right\}$$

2.871 ODE No. 871

$$y'(x) = \frac{2xy(x)^2 + y(x)^2 + 4xy(x)\log(2x+1) + 2y(x)\log(2x+1) + 2x\log^2(2x+1) + \log^2(2x+1) - 2}{2x+1}$$

✓ **Mathematica** : cpu = 0.023746 (sec), leaf count = 22

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{c_1 - x} - \log(2x + 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.082 (sec), leaf count = 66

$$\left\{ y(x) = -\frac{1}{2} \left(4 \frac{\ln(2x+1)x}{2x+1} + 2 \frac{\ln(2x+1)}{2x+1} \right) \left(2 \frac{x}{2x+1} + (2x+1)^{-1} \right)^{-1} + (-C1 - x)^{-1} \right\}$$

2.872 ODE No. 872

$$y'(x) = \frac{14x^{7/2} + \frac{12x^6}{5} - 6x^3y(x) - 6x^3 - 5\sqrt{x}y(x) + 10x - 5\sqrt{x} - 5}{x(2x^3 - 5y(x) + 10\sqrt{x} - 5)}$$

✓ **Mathematica** : cpu = 0.0467017 (sec), leaf count = 215

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{5}(2x^3 + 10\sqrt{x} - 5) - \frac{\sqrt{-25c_1x - x(2x^3 + 10\sqrt{x} - 5)^2 - 50x\left(-\frac{4x^{7/2}}{5} - \frac{2x^6}{25} + \frac{2x^3}{5} - 2x + 2\right)}}{5\sqrt{-\frac{1}{x}x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.066 (sec), leaf count = 49

$$\left\{ y(x) = \frac{2x^3}{5} + 2\sqrt{x} - \sqrt{-C1 + 2\ln(x)} - 1, y(x) = \frac{2x^3}{5} + 2\sqrt{x} + \sqrt{-C1 + 2\ln(x)} - 1 \right\}$$

2.873 ODE No. 873

$$y'(x) = \frac{2y(x) + 1}{x(2xy(x)^4 + 3xy(x)^3 + xy(x)^2 + 2xy(x) + x - 2)}$$

✓ **Mathematica** : cpu = 0.343912 (sec), leaf count = 53

$$\text{Solve} \left[\frac{1}{192} (-16y(x)^3 - 12y(x)^2 + 12y(x) - 54 \log(4y(x) + 2) + 7) - \frac{1}{2x(2y(x) + 1)} = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.262 (sec), leaf count = 50

$$\left\{ y(x) = \frac{e^{\text{RootOf}(2x(e^{-z})^4 - 3x(e^{-z})^3 - 6x(e^{-z})^2 + 48_C1 x e^{-z} + 54_Z x e^{-z} + 7e^{-z} x + 96)}}}{2} - \frac{1}{2} \right\}$$

2.874 ODE No. 874

$$y'(x) = \frac{1}{512} x (a^3 x^{12} + 24a^2 x^8 y(x) + 8a^2 x^8 + 192a x^4 y(x)^2 + 128a x^4 y(x) - 256a x^2 + 512y(x)^3 + 512y(x)^2)$$

✓ **Mathematica** : cpu = 0.0729346 (sec), leaf count = 101

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{\frac{1}{8}(3ax^5 + 8x) + 3xy(x)}{\sqrt[3]{29}\sqrt[3]{x^3}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{1}{18} 29^{2/3} (x^3)^{2/3} \right]$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 40

$$\left\{ y(x) = -\frac{ax^4}{8} - \frac{1}{3} + \frac{29 \text{RootOf} \left(x^2 - 162 \int^{-z} (841_a^3 - 27_a + 27)^{-1} d_a + 6_C1 \right)}{9} \right\}$$

2.875 ODE No. 875

$$y'(x) = \frac{x^5 \left(-\sqrt{x^2 + y(x)^2} \right) + x^4 y(x) \sqrt{x^2 + y(x)^2} + xy(x) + y(x)}{x(x+1)}$$

✓ **Mathematica** : cpu = 0.290686 (sec), leaf count = 285

$$\left\{ \left\{ y(x) \rightarrow \frac{x \left(2(x+1)^{\sqrt{2}} \exp \left(\sqrt{2}c_1 + \frac{x^4}{2\sqrt{2}} + \frac{x^2}{\sqrt{2}} + \frac{1}{3}\sqrt{2}(x^2+3)x + \frac{25}{6\sqrt{2}} \right) + (x+1)^{2\sqrt{2}} \left(-e^{2\sqrt{2}c_1 + \frac{x^4}{\sqrt{2}} + \sqrt{2}} \right)}{-2(x+1)^{\sqrt{2}} \exp \left(\sqrt{2}c_1 + \frac{x^4}{2\sqrt{2}} + \frac{x^2}{\sqrt{2}} + \frac{1}{3}\sqrt{2}(x^2+3)x + \frac{25}{6\sqrt{2}} \right) + (x+1)^{2\sqrt{2}} \left(-e^{2\sqrt{2}c_1 + \frac{x^4}{\sqrt{2}} + \sqrt{2}} \right)} \right. \right.$$

✓ **Maple** : cpu = 0.263 (sec), leaf count = 79

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

2.876 ODE No. 876

$$y'(x) = -\frac{y(x)^2 (x^2 y(x) - 2xy(x) + y(x) - 2x)}{2x(xy(x) - 2y(x) - 2)}$$

✓ **Mathematica** : cpu = 0.0198668 (sec), leaf count = 135

$$\left\{ \left\{ y(x) \rightarrow -\frac{4x}{\frac{2\sqrt{-4x \left(c_1 - 2 \left(\frac{x^2}{8} - \frac{x}{2} + \frac{\log(x)}{4} \right) \right) - x(x-2)^2}{\sqrt{-\frac{1}{x}}} - 2(x-2)x} \right. \right\}, \left\{ y(x) \rightarrow \frac{4x}{\frac{2\sqrt{-4x \left(c_1 - 2 \left(\frac{x^2}{8} - \frac{x}{2} + \frac{\log(x)}{4} \right) \right) - x(x-2)^2}{\sqrt{-\frac{1}{x}}}} \right.$$

✓ **Maple** : cpu = 0.048 (sec), leaf count = 41

$$\left\{ y(x) = -4 \left(\sqrt{-C1 - 8 \ln(x)} - 2x + 4 \right)^{-1}, y(x) = 4 \left(\sqrt{-C1 - 8 \ln(x)} + 2x - 4 \right)^{-1} \right\}$$

2.877 ODE No. 877

$$y'(x) = \frac{x^6 - 3x^4y(x) + 2x^3 + 3x^2y(x)^2 - 2xy(x) - y(x)^3 - 2x}{x^2 - y(x) - 1}$$

✓ **Mathematica** : cpu = 0.0176718 (sec), leaf count = 49

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

✓ **Maple** : cpu = 0.049 (sec), leaf count = 71

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

2.878 ODE No. 878

$$y'(x) = \frac{-64a^3x^3 + 48a^2x^2y(x)^2 + 16a^2x^2 - 12axy(x)^4 - 8axy(x)^2 + y(x)^6 + y(x)^4 + 1}{y(x)}$$

✓ **Mathematica** : cpu = 0.269375 (sec), leaf count = 130

$$\text{Solve} \left[2a \left(x - \frac{1}{2} \text{RootSum} \left[64\#1^3 a^3 - 48\#1^2 a^2 y(x)^2 - 16\#1^2 a^2 + 12\#1 a y(x)^4 + 8\#1 a y(x)^2 + 2a - y(x) \right] \right) \right]$$

✓ **Maple** : cpu = 0.483 (sec), leaf count = 75

$$\left\{ \int_b^{y(x)} \frac{-a}{-a^6 + 12_a^4 a x - 48_a^2 a^2 x^2 + 64 a^3 x^3 - a^4 + 8_a^2 a x - 16 a^2 x^2 + 2 a - 1} d_a + x - _C1 \right\}$$

2.879 ODE No. 879

$$y'(x) = \frac{x^2 \left(-\sqrt{x^2 + y(x)^2} \right) + xy(x) \sqrt{x^2 + y(x)^2} + xy(x) + y(x)}{x(x + 1)}$$

✓ **Mathematica** : cpu = 0.149147 (sec), leaf count = 135

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

✓ **Maple** : cpu = 0.233 (sec), leaf count = 55

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

2.880 ODE No. 880

$$y'(x) = -\frac{2a}{128a^4x^3 - 96a^3x^2y(x)^2 - 32a^3x^2 + 24a^2xy(x)^4 + 16a^2xy(x)^2 - 2ay(x)^6 - 2ay(x)^4 - 2a - y(x)}$$

✓ **Mathematica** : cpu = 0.137704 (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 = 0.075 (sec), leaf count = 41

$$\left\{ \frac{y(x)}{2a} + \frac{\int^{(y(x))^2 - 4ax} (-a^3 + a^2 + 1)^{-1} d_a}{8a^2} - _C1 = 0 \right\}$$

2.881 ODE No. 881

$$y'(x) = \frac{x^6 + 9x^4y(x) - 6x^3 + 27x^2y(x)^2 - 18xy(x) + 27y(x)^3 - 18x}{9x^2 + 27y(x) + 27}$$

✓ **Mathematica** : cpu = 0.0183863 (sec), leaf count = 75

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{27 \left(\frac{1}{27} - \frac{1}{\sqrt{c_1 - 1458x}} \right)} + \frac{1}{3}(-x^2 - 3) \right\}, \left\{ y(x) \rightarrow \frac{1}{27 \left(\frac{1}{\sqrt{c_1 - 1458x}} + \frac{1}{27} \right)} + \frac{1}{3}(-x^2 - 3) \right\} \right\}$$

✓ **Maple** : cpu = 0.051 (sec), leaf count = 75

$$\left\{ y(x) = \frac{1}{-6x + 6_C1} \left(-2_C1 x^2 + 2x^3 + 3\sqrt{2_C1 - 2x + 1} + 3 \right), y(x) = -\frac{1}{-6x + 6_C1} \left(2_C1 \right. \right.$$

2.882 ODE No. 882

$$y'(x) = -\frac{1}{216}\sqrt{x}(-108x^{3/2} + x^9 - 18x^6y(x) - 6x^6 + 108x^3y(x)^2 + 72x^3y(x) - 216y(x)^3 - 216y(x)^2 - 2)$$

✓ **Mathematica** : cpu = 0.0757981 (sec), leaf count = 119

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{\frac{1}{2}(2\sqrt{x}-x^{7/2})+3\sqrt{x}y(x)}{\sqrt[3]{29}\sqrt[3]{x^{3/2}}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{2}{27}29^{2/3}\sqrt{x} \right]$$

✓ **Maple** : cpu = 0.06 (sec), leaf count = 41

$$\left\{ y(x) = \frac{x^3}{6} - \frac{1}{3} + \frac{29}{9} \text{RootOf} \left(2x^{3/2} - 243 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_a + 9_C1 \right) \right\}$$

2.883 ODE No. 883

$$y'(x) = \frac{x(a^3y(x)^6 + a^3y(x)^4 + a^3 + 3a^2bx^2y(x)^4 + 2a^2bx^2y(x)^2 + 3ab^2x^4y(x)^2 + ab^2x^4 + b^3x^6)}{a^{7/2}y(x)}$$

✓ **Mathematica** : cpu = 1.43115 (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 = 0.811 (sec), leaf count = 595

$$\left\{ \int_{-b}^x (b^3_a^6 + 3(y(x))^2 ab^2_a^4 + 3(y(x))^4 a^2b_a^2 + (y(x))^6 a^3 + a_a^4b^2 + 2(y(x))^2 a^2b_a^2 + (y(x))^4 a^3 \right.$$

2.884 ODE No. 884

$$y'(x) = -\frac{x(x^6 - 3x^4y(x)^2 - x^4 + 3x^2y(x)^4 + 2x^2y(x)^2 - y(x)^6 - y(x)^4 - 1)}{y(x)}$$

✓ **Mathematica** : cpu = 0.362754 (sec), leaf count = 71

Solve $\left[\frac{1}{4} \left(2 \log(-x^2 + y(x)^2 + 1) - 2x^2 - \frac{1}{y(x)(y(x) + x)} + \frac{1}{xy(x) - y(x)^2} - 2 \log(x - y(x)) - 2 \log(y(x)) \right) \right]$

✓ **Maple** : cpu = 0.345 (sec), leaf count = 107

$$\left\{ y(x) = e^{\text{RootOf}\left(-3x^2(e^{-Z})^2 + 6x^3e^{-Z} + 3(e^{-Z})^2 \ln\left(\frac{(e^{-Z})^2 - 2e^{-Z}x + 1}{e^{-Z} - 2x}\right) - 2_C1(e^{-Z})^2 - 3_Z(e^{-Z})^2 - 6e^{-Z} \ln\left(\frac{(e^{-Z})^2 - 2e^{-Z}x + 1}{e^{-Z} - 2x}\right)\right)}$$

2.885 ODE No. 885

$$y'(x) = -\frac{i(x^6 + 12x^4y(x)^2 + 4x^4 + 48x^2y(x)^4 + 32x^2y(x)^2 + 64y(x)^6 + 64y(x)^4 + 32ix + 64)}{128y(x)}$$

✗ **Mathematica** : cpu = 40.7374 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[1][y][x] == ((-I/128)*(64 + (32*I)*x + 4*x^4 + x^6 + 32*x^2*y[x]^2 + 64*y[x]^4 + 64*y[x]^6 + 32*I*x + 64)/128*y[x]), y[x]]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x), x) = -1/128*I*(32*I*x+64+64*y(x)^4+32*x^2*y(x)^2+4*x^4+64*y(x)^6+48*x^2*y(x)^2+4*x^4+32*x^2*y(x)^2+64*y(x)^6+64*y(x)^4+32*I*x+64)/128*y(x), y(x))`

2.886 ODE No. 886

$$y'(x) = \frac{x^6y(x)^3 - 3x^5y(x)^2 + x^4y(x)^2 + 3x^4y(x) - 4x^3y(x) - x^3 + 2x^2 + 1}{x^4}$$

✓ **Mathematica** : cpu = 0.0577667 (sec), leaf count = 82

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 = 0.036 (sec), leaf count = 42

$$\left\{ y(x) = \frac{9x - 3 + 29 \text{RootOf}\left(-81 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_ax + 3_C1 x - 1\right)}{9x^2} \right\}$$

2.887 ODE No. 887

$$y'(x) = \frac{a^3 x^3 y(x)^3 + 3a^2 x^2 y(x)^2 + a^2 x y(x) + a^2 x + 3axy(x) + a + 1}{a^2 x^2 (axy(x) + ax + 1)}$$

✓ **Mathematica** : cpu = 0.0264902 (sec), leaf count = 106

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{a^3 x^3 \left(\frac{1}{a^3 x^3} - \frac{1}{x^3 \sqrt{c_1 - 2a^6 x}} \right)} - \frac{ax + 1}{ax} \right\}, \left\{ y(x) \rightarrow \frac{1}{a^3 x^3 \left(\frac{1}{x^3 \sqrt{c_1 - 2a^6 x}} + \frac{1}{a^3 x^3} \right)} - \frac{ax + 1}{ax} \right\} \right\}$$

✓ **Maple** : cpu = 0.052 (sec), leaf count = 70

$$\left\{ y(x) = -\frac{1}{ax} \left(-ax + \sqrt{-C1 - 2x - 1} \right) \left(\sqrt{-C1 - 2x - 1} \right)^{-1}, y(x) = -\frac{1}{ax} \left(ax + \sqrt{-C1 - 2x + 1} \right) \right\}$$

2.888 ODE No. 888

$$y'(x) = \frac{x^4 y(x)^3 - 5x^3 y(x)^2 + 6x^2 y(x) - 2xy(x) - 2x + 1}{x^2 (x^2 y(x) - x + 1)}$$

✓ **Mathematica** : cpu = 0.0195565 (sec), leaf count = 78

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{x^4 \left(\frac{1}{x^2} - \frac{1}{x^2 \sqrt{c_1 + \frac{2}{x}}} \right)} + \frac{x - 1}{x^2} \right\}, \left\{ y(x) \rightarrow \frac{1}{x^4 \left(\frac{1}{x^2 \sqrt{c_1 + \frac{2}{x}}} + \frac{1}{x^2} \right)} + \frac{x - 1}{x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.057 (sec), leaf count = 79

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

2.889 ODE No. 889

$$y'(x) = -\frac{e^x(-8y(x)^{9/2} + 36e^x y(x)^3 - 8y(x)^3 + 24e^x y(x)^{3/2} - 54e^{2x} y(x)^{3/2} - 18e^{2x} + 27e^{3x} - 8)}{8\sqrt{y(x)}}$$

✗ **Mathematica** : cpu = 300.273 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 1.276 (sec), leaf count = 47

$$\left\{ e^x + \frac{2}{3} \left((y(x))^{\frac{3}{2}} - \frac{3e^x}{2} \right)^{-1} - \frac{2}{3} \ln \left((y(x))^{\frac{3}{2}} - \frac{3e^x}{2} + 1 \right) + \frac{2}{3} \ln \left((y(x))^{\frac{3}{2}} - \frac{3e^x}{2} \right) - C1 = 0 \right\}$$

2.890 ODE No. 890

$$y'(x) = \frac{x}{x^6 + 3x^4 y(x)^2 + x^4 + 3x^2 y(x)^4 + 2x^2 y(x)^2 + y(x)^6 + y(x)^4 - y(x) + 1}$$

✓ **Mathematica** : cpu = 0.14425 (sec), leaf count = 103

Solve $\left[y(x) - \frac{1}{2} \text{RootSum} \left[\#1^3 + 3\#1^2 y(x)^2 + \#1^2 + 3\#1 y(x)^4 + 2\#1 y(x)^2 + y(x)^6 + y(x)^4 + 1 \&, \frac{\#1^2}{3\#1^2} \right] \right]$

✓ **Maple** : cpu = 0.994 (sec), leaf count = 34

$$\left\{ -y(x) + \frac{\int^{(y(x))^2+x^2} (-a^3 + a^2 + 1)^{-1} d_a}{2} - C1 = 0 \right\}$$

2.891 ODE No. 891

$$y'(x) = \frac{y(x)^2 (x^4 y(x) + 2x^2 y(x) + 2x^2 - 2y(x))}{x^3 (x^2 y(x) + x^2 - y(x))}$$

✓ **Mathematica** : cpu = 0.0258467 (sec), leaf count = 135

$$\left\{ \left\{ y(x) \rightarrow \frac{x^5}{\sqrt{x^5 \left(c_1 - 2 \left(\frac{1}{2x^4} - \frac{1}{x^2} + \log(x) \right) \right) + (x^2 - 1)^2 x}} - x^3 (x^2 - 1) \right\}, \left\{ y(x) \rightarrow -\frac{x^5}{\sqrt{x^5 \left(c_1 - 2 \left(\frac{1}{2x^4} - \frac{1}{x^2} + \log(x) \right) \right) + (x^2 - 1)^2 x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.064 (sec), leaf count = 56

$$\left\{ y(x) = x^2 \left(\sqrt{-C1 - 2 \ln(x)x^2 - x^2 + 1} \right)^{-1}, y(x) = -x^2 \left(\sqrt{-C1 - 2 \ln(x)x^2 + x^2 - 1} \right)^{-1} \right\}$$

2.892 ODE No. 892

$$y'(x) = \frac{e^{-\frac{2}{x^2 - y(x)^2 - 1}} + x^2 + 2xy(x) + y(x)^2}{-e^{-\frac{2}{x^2 - y(x)^2 - 1}} + x^2 + 2xy(x) + y(x)^2}$$

✗ **Mathematica** : cpu = 300.014 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.517 (sec), leaf count = 40

$$\left\{ y(x) = e^{\text{RootOf}\left(-Z + \int (e^{-Z})^2 - 2e^{-Z}x(e^{2(1+a)^{-1}} + a)^{-1} d_a + C1\right) - x} \right\}$$

2.893 ODE No. 893

$$y'(x) = \frac{x^3y(x)^3 + x^3y(x)^2 + x^3 + 6x^2y(x)^2 + 4x^2y(x) + 12xy(x) + 6x + 8}{x^3}$$

✓ **Mathematica** : cpu = 0.0655615 (sec), leaf count = 80

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{3y(x) + \frac{x+6}{\sqrt[3]{29}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{1}{9} 29^{2/3} x, y(x) \right]$$

✓ **Maple** : cpu = 0.03 (sec), leaf count = 41

$$\left\{ y(x) = \frac{29 \text{RootOf}\left(-81 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_a + x + 3_C1\right) x - 3x - 18}{9x} \right\}$$

2.894 ODE No. 894

$$y'(x) = -\frac{i(x^6 + 3x^4y(x)^2 + x^4 + 3x^2y(x)^4 + 2x^2y(x)^2 + y(x)^6 + y(x)^4 + ix + 1)}{y(x)}$$

✗ **Mathematica** : cpu = 40.7049 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == ((-1)*(1 + I*x + x^4 + x^6 + 2*x^2*y[x]^2 + 3*x^4*y[x]^2

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(diff(y(x), x) = -I*(I*x+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+

2.895 ODE No. 895

$$y'(x) = \frac{x(a^3x^{12} + 24a^2x^8y(x) - 32a^2x^6 + 192ax^4y(x)^2 - 256ax^2y(x) - 256ax^2 + 512y(x)^3)}{64ax^4 + 512y(x) + 512}$$

✓ **Mathematica** : cpu = 0.0266655 (sec), leaf count = 81

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{8}(-ax^4 - 8) + \frac{1}{512 \left(\frac{1}{512} - \frac{1}{\sqrt{c_1 - 262144x^2}} \right)} \right\}, \left\{ y(x) \rightarrow \frac{1}{8}(-ax^4 - 8) + \frac{1}{512 \left(\frac{1}{\sqrt{c_1 - 262144x^2}} + 5 \right)} \right\} \right.$$

✓ **Maple** : cpu = 0.059 (sec), leaf count = 80

$$\left\{ y(x) = -\frac{1}{8} \left(\sqrt{-x^2 + _C1ax^4 - ax^4 - 8} \right) \left(-1 + \sqrt{-x^2 + _C1} \right)^{-1}, y(x) = -\frac{1}{8} \left(\sqrt{-x^2 + _C1ax^4 + a} \right) \right.$$

2.896 ODE No. 896

$$y'(x) = \frac{-x^6 + 3x^4y(x)^2 + x^4 - 3x^2y(x)^4 - 2x^2y(x)^2 + y(x)^6 + y(x)^4 + x + 1}{y(x)}$$

✓ **Mathematica** : cpu = 0.226817 (sec), leaf count = 106

Solve $\left[\frac{1}{2} \text{RootSum} \left[-\#1^3 + 3\#1^2y(x)^2 + \#1^2 - 3\#1y(x)^4 - 2\#1y(x)^2 + y(x)^6 + y(x)^4 + 1 \&, \frac{1}{3\#1^2 - 6\#} \right] \right.$

✓ **Maple** : cpu = 0.392 (sec), leaf count = 63

$$\left\{ \int_{-b}^{y(x)} \frac{-a}{-a^6 + 3_a^4x^2 - 3_a^2x^4 + x^6 -_a^4 + 2_a^2x^2 - x^4 - 1} d_a + x - _C1 = 0 \right\}$$

2.897 ODE No. 897

$$y'(x) = \frac{\sqrt{x}(-108x^{3/2}y(x) + 18x^{9/2} - 108x^{3/2} + x^9 - 18x^6y(x) + 108x^3y(x)^2 - 216y(x)^3)}{36x^3 - 216y(x) - 216}$$

✓ **Mathematica** : cpu = 0.0281557 (sec), leaf count = 79

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{6}(x^3 - 6) - \frac{1}{216 \left(-\frac{1}{\sqrt{c_1 - 62208x^{3/2}}} - \frac{1}{216} \right)} \right\}, \left\{ y(x) \rightarrow \frac{1}{6}(x^3 - 6) - \frac{1}{216 \left(\frac{1}{\sqrt{c_1 - 62208x^{3/2}}} - \frac{1}{216} \right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.077 (sec), leaf count = 85

$$\left\{ y(x) = \frac{1}{6} \left(\sqrt{9_C1 - 12x^{3/2}x^3 - 3x^3 + 18} \right) \left(-3 + \sqrt{9_C1 - 12x^{3/2}} \right)^{-1}, y(x) = \frac{1}{6} \left(\sqrt{9_C1 - 12x^{3/2}} \right)^{-1} \right\}$$

2.898 ODE No. 898

$$y'(x) = \frac{4x^6y(x)^3 + 2x^5y(x) + 2x^5 + 3x^4y(x)^2 + \frac{x^3}{2} + \frac{3}{4}x^2y(x) + \frac{1}{16}}{x^6(4x^2y(x) + 4x^2 + 1)}$$

✓ **Mathematica** : cpu = 0.0247757 (sec), leaf count = 106

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{64x^8 \left(\frac{1}{64x^8} - \frac{1}{x^8 \sqrt{c_1 + \frac{8192}{x}}} \right)} - \frac{4x^2 + 1}{4x^2} \right\}, \left\{ y(x) \rightarrow \frac{1}{64x^8 \left(\frac{1}{x^8 \sqrt{c_1 + \frac{8192}{x}}} + \frac{1}{64x^8} \right)} - \frac{4x^2 + 1}{4x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.051 (sec), leaf count = 83

$$\left\{ y(x) = -\frac{1}{4x^2} \left(-4x^2 + \sqrt{\frac{-C1x + 2}{x}} - 1 \right) \left(\sqrt{\frac{-C1x + 2}{x}} - 1 \right)^{-1}, y(x) = -\frac{1}{4x^2} \left(4x^2 + \sqrt{\frac{-C1x + 2}{x}} \right) \right\}$$

2.899 ODE No. 899

$$y'(x) = \frac{x^6 y(x)^3 + x^6 y(x)^2 + x^6 + \frac{x^5}{2} + \frac{3}{4} x^4 y(x)^2 + \frac{1}{2} x^4 y(x) + \frac{3}{16} x^2 y(x) + \frac{x^2}{16} + \frac{1}{64}}{x^8}$$

✓ **Mathematica** : cpu = 0.0703517 (sec), leaf count = 106

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29 \#1^3 + 3 \sqrt[3]{29} \#1 - 29 \&, \frac{\log \left(\frac{\frac{3y(x)}{x^2} + \frac{4x^2+3}{4x^4} - \#1 \right)}{\sqrt[3]{29} \sqrt[3]{\frac{1}{x^6}}} - \#1 \right) \& \right] = c_1 - \frac{1}{9} 29^{2/3} \left(\frac{1}{x^6} \right)^{2/3} x^3, \right]$$

✓ **Maple** : cpu = 0.035 (sec), leaf count = 47

$$\left\{ y(x) = \frac{116 \text{RootOf} \left(-81 \int^{-Z} (841 _a^3 - 27 _a + 27)^{-1} d_a x + 3 _C1 x - 1 \right) x^2 - 12 x^2 - 9}{36 x^2} \right\}$$

2.900 ODE No. 900

$$y'(x) = \frac{2a(4ax - y(x)^2 - 1)}{128a^4x^3 - 96a^3x^2y(x)^2 + 24a^2xy(x)^4 - 2ay(x)^6 + 4axy(x) - y(x)^3 - y(x)}$$

✓ **Mathematica** : cpu = 0.0970745 (sec), leaf count = 381

$$\{ \{ y(x) \rightarrow \text{Root} [8 \#1^5 a - 16 \#1^4 a^2 c_1 - 64 \#1^3 a^2 x + \#1^2 (128 a^3 c_1 x - 2) + 128 \#1 a^3 x^2 - 256 a^4 c_1 x^2 + 8 a x^3 - 12 x^2 - 9] \}$$

✓ **Maple** : cpu = 0.074 (sec), leaf count = 46

$$\left\{ \frac{y(x)}{2a} - \frac{1}{8a^2((y(x))^2 - 4ax)} - \frac{1}{16a^2((y(x))^2 - 4ax)^2} - _C1 = 0 \right\}$$

2.901 ODE No. 901

$$y'(x) = \frac{y(x) (-ax \log(y(x)) + x^2 + y(x))}{x(ax - y(x) - y(x) \log(x) - y(x) \log(y(x)))}$$

✓ **Mathematica** : cpu = 0.0928558 (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 = 0.504 (sec), leaf count = 30

$$\left\{ y(x) = e^{\text{RootOf}(-2_Z ax + 2 \ln(x) e^{-Z} + 2_Z e^{-Z} + 2_C1 a + x^2)} \right\}$$

2.902 ODE No. 902

$$y'(x) = \frac{x^6 - 3x^4 y(x)^2 + x^3 + 3x^2 y(x)^4 - x y(x)^2 - y(x)^6 - x}{y(x) (x^2 - y(x)^2 - 1)}$$

✓ **Mathematica** : cpu = 0.102141 (sec), leaf count = 295

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{2} \sqrt{\frac{4x^3}{x - c_1} - \frac{4c_1 x^2}{x - c_1} - \frac{\sqrt{4c_1 - 4x + 1}}{x - c_1} - \frac{1}{x - c_1}} \right\}, \left\{ y(x) \rightarrow \frac{1}{2} \sqrt{\frac{4x^3}{x - c_1} - \frac{4c_1 x^2}{x - c_1} - \frac{\sqrt{4c_1}}{x}} \right\} \right.$$

✓ **Maple** : cpu = 0.263 (sec), leaf count = 175

$$\left\{ y(x) = -\frac{1}{2_C1 + 6x} \sqrt{(-C1 + 3x) (4_C1 x^2 + 12x^3 + \sqrt{-12_C1 - 36x + 9} - 3)}, y(x) = \frac{1}{2_C1} \right.$$

2.903 ODE No. 903

$$y'(x) = \frac{\sin\left(\frac{y(x)}{x}\right) \csc\left(\frac{y(x)}{2x}\right) \sec\left(\frac{y(x)}{2x}\right) \left(2x^2 \sin\left(\frac{y(x)}{2x}\right) \cos\left(\frac{y(x)}{2x}\right) + y(x)\right)}{2x}$$

✓ **Mathematica** : cpu = 0.0519036 (sec), leaf count = 19

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

✓ **Maple** : cpu = 0.075 (sec), leaf count = 48

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

2.904 ODE No. 904

$$y'(x) = \frac{\sin\left(\frac{y(x)}{x}\right) \csc\left(\frac{y(x)}{2x}\right) \sec\left(\frac{y(x)}{2x}\right) \left(2x^3 \sin\left(\frac{y(x)}{2x}\right) \cos\left(\frac{y(x)}{2x}\right) + y(x)\right)}{2x}$$

✓ **Mathematica** : cpu = 0.0531407 (sec), leaf count = 23

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

✓ **Maple** : cpu = 0.048 (sec), leaf count = 64

$$\left\{ y(x) = \arctan \left(2 \frac{e^{1/2 x^2} - C1}{(e^{1/2 x^2})^2 - C1^2 + 1}, -1 \left(\left(e^{\frac{x^2}{2}} \right)^2 - C1^2 - 1 \right) \left(\left(e^{\frac{x^2}{2}} \right)^2 - C1^2 + 1 \right)^{-1} \right) x \right\}$$

2.905 ODE No. 905

$$y'(x) = \frac{a^3 x^3 y(x)^3 + a^3 x^3 y(x)^2 + a^3 x^3 + 3a^2 x^2 y(x)^2 + 2a^2 x^2 y(x) + a^2 x + 3axy(x) + ax + 1}{a^3 x^3}$$

✓ **Mathematica** : cpu = 0.0641312 (sec), leaf count = 85

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log\left(\frac{ax+3+3y(x)}{\sqrt[3]{29}} - \#1\right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{1}{9} 29^{2/3} x, y(x) \right]$$

✓ **Maple** : cpu = 0.044 (sec), leaf count = 46

$$\left\{ y(x) = \frac{29 \text{RootOf}\left(-81 \int^{-Z} (841 _a^3 - 27 _a + 27)^{-1} d_a + x + 3 _C1\right) ax - 3ax - 9}{9ax} \right\}$$

2.906 ODE No. 906

$$y'(x) = \frac{x(x^2 + y(x)^2 + 1)}{x^6 + 3x^4y(x)^2 + 3x^2y(x)^4 - x^2y(x) + y(x)^6 - y(x)^3 - y(x)}$$

✓ **Mathematica** : cpu = 0.0582745 (sec), leaf count = 326

$$\{ \{ y(x) \rightarrow \text{Root}[4\#1^5 - 4\#1^4c_1 + 8\#1^3x^2 + \#1^2(2 - 8c_1x^2) + 4\#1x^4 - 4c_1x^4 + 2x^2 + 1\&, 1] \}, \{ y(x) -$$

✓ **Maple** : cpu = 0.36 (sec), leaf count = 33

$$\left\{ -\frac{1}{4((y(x))^2 + x^2)^2} - \frac{1}{2(y(x))^2 + 2x^2} - y(x) + _C1 = 0 \right\}$$

2.907 ODE No. 907

$$y'(x) = \frac{\frac{3x^2}{2} + x^2 \sin(x) - 2x^2 \cos(x) + \frac{1}{2}x^2 \cos(2x) - 2xy(x) + y(x)^2 + 2xy(x) \cos(x) + x - x \cos(x)}{x}$$

✓ **Mathematica** : cpu = 0.0527929 (sec), leaf count = 22

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{c_1 - \log(x)} - x(\cos(x) - 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.162 (sec), leaf count = 22

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

2.908 ODE No. 908

$$y'(x) = \frac{4(a-1)(a+1)x}{a^6x^4 - 3a^4x^4 - 2a^4x^2y(x)^2 + 3a^2x^4 + 4a^2x^2y(x)^2 + a^2y(x)^4 - x^4 - 2x^2y(x)^2 - y(x)^4 + 4y(x)}$$

✓ **Mathematica** : cpu = 1.55101 (sec), leaf count = 1278

$$\left\{ \left\{ y(x) \rightarrow -\frac{c_1}{3(1-a^2)} + \frac{\sqrt[3]{18x^2c_1a^6 - 54x^2c_1a^4 - 54a^4 + 54x^2c_1a^2 + 108a^2 - 2c_1^3 - 18x^2c_1 + \sqrt{4(3(1-a^2)^2c_1^3 - 4(1-a^2)c_1^2 + 3(1-a^2)^2c_1 - 4(1-a^2)^2)}}{3(1-a^2)}} \right\} \right\}$$

✓ **Maple** : cpu = 0.436 (sec), leaf count = 1742

$$\left\{ y(x) = \frac{9^{\frac{2}{3}}}{27a^2 - 27} \left((-C1 a^2 + C1) \sqrt[3]{9} \sqrt[3]{(a+1)^2 (a-1)^2} \left(\frac{1}{3} \sqrt{-3(a-1)^5 (a+1)^5 x^6 + 6C1^2} \right) \right) \right.$$

2.909 ODE No. 909

$$y'(x) = \frac{x^3 y(x)^6 + x^3 y(x)^4 + x^3 + 3x^2 y(x)^4 + 2x^2 y(x)^2 + 3x y(x)^2 + x + 1}{x^5 y(x)}$$

✗ **Mathematica** : cpu = 40.7199 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == (1 + x + x^3 + 3*x*y[x]^2 + 2*x^2*y[x]^2 + 3*x^2*y[x]^4

✓ **Maple** : cpu = 0.578 (sec), leaf count = 84

$$\left\{ y(x) = \frac{1}{x} \sqrt{x \left(\text{RootOf} \left(\int^{-Z} (2a^3 + 2a^2 + 1)^{-1} da + C1 x + 1 \right) x - 1 \right)}, y(x) = -\frac{1}{x} \sqrt{x \left(\text{RootOf} \right)} \right.$$

2.910 ODE No. 910

$$y'(x) = \frac{x^6 + 3x^5 y(x) + 3x^4 y(x)^2 + x^4 + x^3 y(x)^3 + 2x^3 y(x) + x^2 y(x)^2 - y(x) - 2x + 1}{x}$$

✓ **Mathematica** : cpu = 0.0613176 (sec), leaf count = 98

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{3x^3 + 3x^2 y(x) + x}{\sqrt[3]{29} \sqrt[3]{x^3}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{29^{2/3} (x^3)^{2/3}}{9x}, y(x) \right]$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 42

$$\left\{ y(x) = \frac{-9x^2 + 29 \text{RootOf} \left(-81 \int^{-Z} (841a^3 - 27a + 27)^{-1} da + x + 3C1 \right) - 3}{9x} \right\}$$

2.911 ODE No. 911

$$y'(x) = -y(x) \left(-_F1(x) - \frac{\log(y(x))}{x} + \cot(x) \log(y(x)) \right)$$

✓ **Mathematica** : cpu = 4.27969 (sec), leaf count = 56

$$\text{Solve} \left[\int_1^x \left(\frac{2 \log(y(x)) \sin(K[1])}{K[1]^2} - \frac{2(\log(y(x)) \cos(K[1]) - \sin(K[1])_F1(K[1]))}{K[1]} \right) dK[1] - 2 \sin(1) \log(y(x)) \right]$$

✓ **Maple** : cpu = 0.582 (sec), leaf count = 30

$$\left\{ y(x) = e^{\frac{C1 x}{\sin(x)}} e^{\frac{x}{\sin(x)} \int \frac{-F1(x) \sin(x)}{x} dx} \right\}$$

2.912 ODE No. 912

$$y'(x) = \frac{2ax}{-128a^4 + 96a^3xy(x)^2 + 32a^3x - 24a^2x^2y(x)^4 - 16a^2x^2y(x)^2 + 2ax^3y(x)^6 + 2ax^3y(x)^4 + 2ax^3 - 1}$$

✓ **Mathematica** : cpu = 1.56878 (sec), leaf count = 205

$$\text{Solve} \left[-\text{RootSum} \left[-\#1^3y(x)^6 - \#1^3y(x)^4 - \#1^3 + 12\#1^2ay(x)^4 + 8\#1^2ay(x)^2 - 48\#1a^2y(x)^2 - 16\#1a^2 + \#1 \right] \right]$$

✓ **Maple** : cpu = 4.497 (sec), leaf count = 43

$$\left\{ -\frac{y(x)}{2a} + \frac{1}{8a^2} \int^{(y(x))^2 - 4\frac{a}{x}} \left(-a^3 + -a^2 + 1 \right)^{-1} d_a - C1 = 0 \right\}$$

2.913 ODE No. 913

$$y'(x) = \frac{y(x)^3 + y(x) + y(x)^3 (-\log^3(x)) + y(x)^3 \log^2(x) + 3y(x)^2 \log^2(x) - 2y(x)^2 \log(x) - 3y(x) \log(x)}{xy(x)}$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.059 (sec), leaf count = 43

$$\left\{ y(x) = 9 \left(9 \ln(x) + 56 \text{RootOf} \left(-81 \int^{-Z} (3136 - a^3 - 27 - a + 27)^{-1} d_a - \ln(x) + 3 - C1 \right) - 3 \right)^{-1} \right\}$$

2.914 ODE No. 914

$$y'(x) = \frac{2a(-4a + xy(x)^2 + x)}{-128a^4 + 96a^3xy(x)^2 - 24a^2x^2y(x)^4 + 2ax^3y(x)^6 + 4ax^2y(x) - x^3y(x)^3 - x^3y(x)}$$

✓ **Mathematica** : cpu = 1.66589 (sec), leaf count = 401

$$\{ \{y(x) \rightarrow \text{Root}[8\#1^5ax^2 - 8\#1^4ac_1x^2 - 64\#1^3a^2x + \#1^2(64a^2c_1x + 2x^2) + 128\#1a^3 - 128a^3c_1 - 8ax$$

✓ **Maple** : cpu = 3.231 (sec), leaf count = 77

$$\left\{ -\frac{1}{2a} \left(-2 \frac{a}{(y(x))^4 (x(y(x))^2 - 4a)^2} - \frac{(y(x))^2 + 1}{(y(x))^4 (x(y(x))^2 - 4a)} \right) + \frac{1}{4a^2} \left(2ay(x) + \frac{1}{2(y(x))^2} + \frac{1}{4(y(x))} \right) \right\}$$

2.915 ODE No. 915

$$y'(x) = \frac{y(x)^3 + y(x) - 8y(x)^3 \log^3(x) + 4y(x)^3 \log^2(x) + 12y(x)^2 \log^2(x) - 4y(x)^2 \log(x) - 6y(x) \log(x) - 6}{xy(x)}$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.061 (sec), leaf count = 43

$$\left\{ y(x) = 9 \left(18 \ln(x) + 83 \text{RootOf} \left(-81 \int^{-Z} (6889_a^3 - 27_a + 27)^{-1} d_a - \ln(x) + 3_C1 \right) - 3 \right) \right\}$$

2.916 ODE No. 916

$$y'(x) = \frac{y(x) (x^4 \log^2(y(x)) + 2x^4 \log(x) \log(y(x)) + x^4 \log^2(x) + x \log(y(x)) + \log(y(x)) - x + x \log(x) + 1)}{x(x+1)}$$

✗ **Mathematica** : cpu = 2.12076 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == ((-1 - x + Log[x] + x*Log[x] + x^4*Log[x]^2 + Log[y[x]]

✓ **Maple** : cpu = 0.309 (sec), leaf count = 80

$$\left\{ y(x) = e^{-\frac{3x^4 \ln(x) - 4x^3 \ln(x) + 6x^2 \ln(x) + 12 \ln(1+x) \ln(x) - 12_C1 \ln(x) - 12x \ln(x) + 12x}{3x^4 - 4x^3 + 6x^2 + 12 \ln(1+x) - 12_C1 - 12x}} \right\}$$

2.917 ODE No. 917

$$y'(x) = \frac{y(x) (x \log^2(y(x)) + 2x \log(x) \log(y(x)) + x \log(y(x)) + \log(y(x)) - x + x \log^2(x) + x \log(x) + \log(x))}{x(x+1)}$$

✗ **Mathematica** : cpu = 1.24147 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == ((-1 - x + Log[x] + x*Log[x] + x*Log[x]^2 + Log[y[x]] +

✓ **Maple** : cpu = 0.221 (sec), leaf count = 38

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

2.918 ODE No. 918

$$y'(x) = \frac{2y(x)^8}{128x^3y(x)^6 + 32x^2y(x)^6 + 96x^2y(x)^4 + 2y(x)^6 + y(x)^5 + 16xy(x)^4 + 24xy(x)^2 + 2y(x)^2 + 2}$$

✗ **Mathematica** : cpu = 300.02 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 1.309 (sec), leaf count = 41

$$\left\{ x - \text{RootOf} \left(\int^{-Z} (64 _a^3 + 16 _a^2 + 1)^{-1} d_a y(x) + _C1 y(x) + 1 \right) + \frac{1}{4 (y(x))^2} = 0 \right\}$$

2.919 ODE No. 919

$$y'(x) = \frac{(-y(x) + \sqrt{y(x)} + x) y(x)^{3/2}}{x^3 - 3x^2y(x) + 3xy(x)^2 + xy(x)^{3/2} - y(x)^3 - y(x)^{5/2} + y(x)^2}$$

✗ **Mathematica** : cpu = 300.338 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.181 (sec), leaf count = 120

$$\left\{ 2 \frac{(y(x))^{3/2}}{(y(x) - x)^3} + 3 \frac{y(x)}{(y(x) - x)^3} - 6 \frac{\sqrt{y(x)}x}{(y(x) - x)^3} - 6 \frac{x}{(y(x) - x)^3} + 6 \frac{x^2}{(y(x) - x)^3 \sqrt{y(x)}} - (y(x) - x)^{-1} \right\}$$

2.920 ODE No. 920

$$y'(x) = \frac{2y(x)^6 (4xy(x)^2 + y(x)^2 + 1)}{128x^3y(x)^6 + 96x^2y(x)^4 + 4xy(x)^5 + y(x)^5 + y(x)^3 + 24xy(x)^2 + 2}$$

✓ **Mathematica** : cpu = 0.247721 (sec), leaf count = 301

{ {y(x) → Root[#1⁵(128c₁x² - 8x - 1) + 128#1⁴x² + #1³(64c₁x - 2) + 64#1²x + 8#1c₁ + 8&, 1] } , {

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception
time expired

2.921 ODE No. 921

$$y'(x) = -y(x) \left(-_F1(x) - \frac{\log(y(x))}{x} + \frac{\log(y(x))}{x \log(x)} \right)$$

✓ **Mathematica** : cpu = 2.61707 (sec), leaf count = 52

Solve[ConditionalExpression[$\int_1^x \left(\frac{\log(y(x)) - \log(y(x)) \log(K[1])}{K[1]^2} - \frac{\log(K[1])_F1(K[1])}{K[1]} \right) dK[1] = c_1$

✓ **Maple** : cpu = 0.149 (sec), leaf count = 30

$$\left\{ y(x) = e^{\frac{C1 x}{\ln(x)}} e^{\frac{x}{\ln(x)} \int \frac{-F1(x) \ln(x)}{x} dx} \right\}$$

2.922 ODE No. 922

$$y'(x) = \frac{y(x)^2}{x^3 - 3x^2y(x) + x^2\sqrt{y(x)} + 3xy(x)^2 - 2xy(x)^{3/2} - y(x)^3 + y(x)^{5/2} + y(x)^2 + y(x)^{3/2}}$$

✗ **Mathematica** : cpu = 299.999 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.142 (sec), leaf count = 47

$$\left\{ \frac{\ln(y(x))}{2} - \int^x \frac{1}{\sqrt{y(x)} - \sqrt{y(x)}} (2_a^3 + 2_a^2 - _a + 2)^{-1} d_a - _C1 = 0 \right\}$$

2.923 ODE No. 923

$$y'(x) = \frac{x^2 + 2xy(x) + e^{-2(x-y(x))(y(x)+x)} + y(x)^2}{x^2 + 2xy(x) - e^{-2(x-y(x))(y(x)+x)} + y(x)^2}$$

✗ **Mathematica** : cpu = 299.999 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.219 (sec), leaf count = 36

$$\left\{ y(x) = e^{\text{RootOf}\left(-_Z + \int (e^{-Z})^2 - 2e^{-Z}x(e^2 - a + _a)^{-1} d_a + _C1\right)} - x \right\}$$

2.924 ODE No. 924

$$y'(x) = -\frac{y(x) \left(-_F1(x) - \frac{\log^2(y(x))}{2x} \right)}{\log(y(x))}$$

✓ **Mathematica** : cpu = 0.949446 (sec), leaf count = 55

Solve [ConditionalExpression [$\int_1^x \left(-\frac{F1(K[1])}{K[1]} - \frac{\log^2(y(x))}{2K[1]^2} \right) dK[1] + \frac{1}{2} \log^2(y(x)) = c_1, \Re(x) > 0 \vee \dots$]

✓ **Maple** : cpu = 0.142 (sec), leaf count = 47

$$\left\{ y(x) = e^{\sqrt{2 \int \frac{F1(x)}{x} dx + 2_C1} x}, y(x) = e^{-\sqrt{2 \int \frac{F1(x)}{x} dx + 2_C1} x} \right\}$$

2.925 ODE No. 925

$$y'(x) = \frac{x^2 + 2xy(x) + e^{2(x-y(x))^2(y(x)+x)^2} + y(x)^2}{x^2 + 2xy(x) - e^{2(x-y(x))^2(y(x)+x)^2} + y(x)^2}$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.243 (sec), leaf count = 38

$$\left\{ y(x) = e^{\text{RootOf}\left(-_Z + \int (e^{-Z})^2 - 2e^{-Z}x(e^2 - a^2 + _a)^{-1} d_a + _C1\right)} - x \right\}$$

2.926 ODE No. 926

$$y'(x) = \frac{\frac{1}{16}x^3y(x)^3 - \frac{1}{2}x^2y(x)^3 - \frac{3}{8}x^2y(x)^2 + xy(x)^3 + xy(x)^2 + \frac{3}{4}xy(x) - \frac{1}{2}}{x(xy(x) - 2y(x) - 2)}$$

✓ **Mathematica** : cpu = 0.0269139 (sec), leaf count = 128

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{16x(x-2) \left(-\frac{e^{2\left(\frac{1}{2}\log(2-x) - \frac{\log(x)}{2}\right)}}{\sqrt{c_1+2048\log(x)}} - \frac{1}{64} \right)} + \frac{2}{x-2} \right\}, \left\{ y(x) \rightarrow \frac{1}{16x(x-2) \left(\frac{e^{2\left(\frac{1}{2}\log(2-x) - \frac{\log(x)}{2}\right)}}{\sqrt{c_1+2048\log(x)}} \right)} \right\} \right.$$

✓ **Maple** : cpu = 0.061 (sec), leaf count = 65

$$\left\{ y(x) = 2 \frac{\sqrt{-C1 + 8 \ln(x)} - 4}{x\sqrt{-C1 + 8 \ln(x)} - 4x + 8}, y(x) = 2 \frac{\sqrt{-C1 + 8 \ln(x)} + 4}{x\sqrt{-C1 + 8 \ln(x)} + 4x - 8} \right\}$$

2.927 ODE No. 927

$$y'(x) = -\frac{1}{8}x \left(12e^{-x^2}x^2y(x)^2 + 8e^{-x^2}x^2y(x) + 8e^{-x^2}x^2 - 8e^{-x^2} + e^{-3x^2}x^6 - 6e^{-2x^2}x^4y(x) - 2e^{-2x^2}x^4 - 8y \right)$$

✓ **Mathematica** : cpu = 0.123376 (sec), leaf count = 112

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{\frac{1}{2}e^{-x^2}x(2e^{x^2}-3x^2)+3xy(x)}{\sqrt[3]{29}\sqrt[3]{x^3}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{1}{18}29^{2/3} \right]$$

✓ **Maple** : cpu = 0.131 (sec), leaf count = 72

$$\left\{ y(x) = -\frac{-9x^2e^{-x^2} + 6e^{-x^2}e^{x^2} - 58 \text{RootOf} \left(x^2 - 162 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_a + 6_C1 \right)}{18e^{-x^2}e^{x^2}} \right\}$$

2.928 ODE No. 928

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

✓ **Mathematica** : cpu = 1.43716 (sec), leaf count = 23

$$\left\{ \left\{ y(x) \rightarrow -x \log \left(-\frac{\log(x+1) - c_1}{x} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.421 (sec), leaf count = 21

$$\left\{ y(x) = -\ln \left(-\frac{\ln(1+x) - C1}{x} \right) x \right\}$$

2.929 ODE No. 929

$$y'(x) = \frac{-\frac{1}{32}x^3y(x)^3 + \frac{1}{16}x^2y(x)^3 + \frac{3}{16}x^2y(x)^2 - \frac{1}{2}xy(x)^3 + \frac{y(x)^3}{4} - \frac{1}{4}xy(x)^2 - \frac{3}{8}xy(x) + \frac{y(x)}{4} + \frac{1}{4}}{xy(x)}$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.043 (sec), leaf count = 42

$$\left\{ y(x) = 18 \left(58 \operatorname{RootOf} \left(-324 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_a - \ln(x) + 12_C1 \right) + 9x - 6 \right)^{-1} \right\}$$

2.930 ODE No. 930

$$y'(x) = \frac{e^{\frac{y(x)}{x}} \left(x^4 + x^2 e^{-\frac{y(x)}{x}} + x e^{-\frac{y(x)}{x}} + x e^{-\frac{y(x)}{x}} y(x) + e^{-\frac{y(x)}{x}} y(x) \right)}{x(x+1)}$$

✓ **Mathematica** : cpu = 1.69706 (sec), leaf count = 39

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

✓ **Maple** : cpu = 0.651 (sec), leaf count = 36

$$\left\{ y(x) = -\ln \left(\frac{-2x^3 + 3x^2 + 6 \ln(1+x) - 6_C1 - 6x}{6x} \right) x \right\}$$

2.931 ODE No. 931

$$y'(x) = \frac{x^6 + 3x^5y(x) + 3x^4y(x)^2 + x^3y(x)^3 - 2x^3 - 3x^2y(x) - xy(x)^2 - y(x) - 2x}{x(x^2 + xy(x) + 1)}$$

✓ **Mathematica** : cpu = 0.0253927 (sec), leaf count = 80

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

✓ **Maple** : cpu = 0.045 (sec), leaf count = 73

$$\left\{ y(x) = -\frac{1}{x} \left(\sqrt{-C1 - 2xx^2 - x^2 - 1} \right) \left(\sqrt{-C1 - 2x - 1} \right)^{-1}, y(x) = -\frac{1}{x} \left(\sqrt{-C1 - 2xx^2 + x^2 + 1} \right) \right\}$$

2.932 ODE No. 932

$$y'(x) = \frac{e^{-\frac{3x^2}{2}} x \left(3e^{3x^2} y(x)^3 + e^{\frac{9x^2}{2}} y(x)^3 + 18e^{3x^2} y(x)^2 + 9e^{\frac{9x^2}{2}} y(x)^2 + 27e^{3x^2} y(x) + 27e^{\frac{9x^2}{2}} y(x) + 27e^{\frac{9x^2}{2}} \right)}{243y(x)}$$

✗ **Mathematica** : cpu = 299.999 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.152 (sec), leaf count = 54

$$\left\{ y(x) = -369 \frac{e^{3/2 x^2}}{123 + 123 e^{3/2 x^2} - 136 \text{RootOf} \left(-41 x^2 - 50243409 \int^{-Z} (9248 _a^3 - 1860867 _a + 18608) \right)} \right\}$$

2.933 ODE No. 933

$$y'(x) = \frac{x^3 + x^3(-\log^3(x)) + x^3 \log^2(x) + 3x^2y(x) \log^2(x) - 2x^2y(x) \log(x) + x^2 + xy(x)^2 + xy(x) + y(x)}{x^2}$$

✓ **Mathematica** : cpu = 0.0824797 (sec), leaf count = 99

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{3y(x) + 1 - 3 \log(x)}{x^2} \sqrt[3]{\frac{1}{x^3}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{29^{2/3}}{9 \sqrt[3]{\frac{1}{x^3}}}, y(x) \right]$$

✓ **Maple** : cpu = 0.041 (sec), leaf count = 39

$$\left\{ y(x) = \frac{x \left(9 \ln(x) - 3 + 29 \operatorname{RootOf} \left(-81 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_a + x + 3_{C1} \right) \right)}{9} \right\}$$

2.934 ODE No. 934

$$y'(x) = -\frac{x^6}{64} - \frac{3x^5}{32} + \frac{3}{16}x^4y(x) - \frac{x^4}{8} + \frac{3}{4}x^3y(x) + \frac{x^3}{8} - \frac{3}{4}x^2y(x)^2 + \frac{1}{4}x^2y(x) + \frac{x^2}{4} - \frac{3}{2}xy(x)^2 - xy(x) + y(x)^3 + y(x)$$

✓ **Mathematica** : cpu = 0.110624 (sec), leaf count = 102

$$\text{Solve} \left[-\frac{31}{3} \operatorname{RootSum} \left[-31\#1^3 + 3 \cdot 2^{2/3} \sqrt[3]{31}\#1 - 31\&, \frac{\log \left(\sqrt[3]{\frac{2}{31}} \left(\frac{1}{4}(-3x^2 - 6x + 4) + 3y(x) \right) - \#1 \right)}{2^{2/3} \sqrt[3]{31} - 31\#1^2} \right] \& \right]$$

✓ **Maple** : cpu = 0.073 (sec), leaf count = 39

$$\left\{ y(x) = \frac{x^2}{4} + \frac{x}{2} + \operatorname{RootOf} \left(-x + 2 \int^{-Z} (2_a^3 + 2_a^2 + 1)^{-1} d_a +_{C1} \right) \right\}$$

2.935 ODE No. 935

$$y'(x) = \frac{x^6}{64} - \frac{3x^5}{16} + \frac{3}{16}x^4y(x) + \frac{13x^4}{16} - \frac{3}{2}x^3y(x) - \frac{3x^3}{2} + \frac{3}{4}x^2y(x)^2 + \frac{7}{2}x^2y(x) + x^2 - 3xy(x)^2 - 2xy(x) + y(x)^3 + y(x)$$

✓ **Mathematica** : cpu = 10.2305 (sec), leaf count = 248

$$\text{Solve} \left[\frac{\sqrt[3]{2} \left(\frac{\frac{1}{4}(3x^2 - 12x + 4) + 3y(x)}{\sqrt[3]{2}} + 2^{2/3} \right) \left(2^{2/3} - 2^{2/3} \left(\frac{1}{4}(3x^2 - 12x + 4) + 3y(x) \right) \right) \left(\left(\frac{1}{4}(-3x^2 + 12x - 4) - 3y \right)}{9 \left(- \left(\frac{1}{4}(3x^2 - 12x + 4) + 3y \right) \right)} \right)}{9 \left(- \left(\frac{1}{4}(3x^2 - 12x + 4) + 3y \right) \right)} \right]$$

✓ **Maple** : cpu = 0.199 (sec), leaf count = 55

$$\left\{ y(x) = \frac{e^{\operatorname{RootOf}(\ln(e^{-Z}-4)e^{-Z}+_{C1}e^{-Z}-_Z e^{-Z}+e^{-Z}x-4 \ln(e^{-Z}-4)-4_{C1}+4_{Z-4}x+4)}}{4} - 1 - \frac{x^2}{4} + x \right\}$$

2.936 ODE No. 936

$$y'(x) = \frac{x^6}{512} - \frac{3x^5}{256} + \frac{3}{64}x^4y(x) + \frac{5x^4}{128} - \frac{3}{16}x^3y(x) - \frac{5x^3}{64} + \frac{3}{8}x^2y(x)^2 + \frac{7}{16}x^2y(x) + \frac{x^2}{16} - \frac{3}{4}xy(x)^2 - \frac{1}{2}xy(x) + y(x)^3$$

✓ **Mathematica** : cpu = 0.103345 (sec), leaf count = 99

$$\text{Solve} \left[-\frac{89}{3} \text{RootSum} \left[-89\#1^3 + 6\sqrt[3]{178}\#1 - 89\&, \frac{\log \left(\frac{2^{2/3}(\frac{1}{8}(3x^2-6x+8)+3y(x))}{\sqrt[3]{89}} - \#1 \right)}{2\sqrt[3]{178} - 89\#1^2} \& \right] = c_1 + \frac{89^{2/3}x}{18\sqrt[3]{2}}, \right]$$

✓ **Maple** : cpu = 0.085 (sec), leaf count = 39

$$\left\{ y(x) = -\frac{x^2}{8} + \frac{x}{4} + \text{RootOf} \left(-x + 4 \int^{-Z} (4_a^3 + 4_a^2 + 3)^{-1} d_a + _C1 \right) \right\}$$

2.937 ODE No. 937

$$y'(x) = \frac{2xy(x)^3 + y(x)^3 - 2y(x) + 6xy(x) \log^2(2x + 1) + 3y(x) \log^2(2x + 1) + 6xy(x)^2 \log(2x + 1) + 3y(x)^2 \log(2x + 1)}{(2x + 1)(y(x) + \log(2x + 1)) + 1}$$

✓ **Mathematica** : cpu = 0.0281116 (sec), leaf count = 124

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{(2x + 1) \left(\frac{2x+1}{4x^2+4x+1} - \frac{1}{(2x+1)\sqrt{c_1-2x}} \right)} - \log(2x + 1) - 1 \right\}, \left\{ y(x) \rightarrow \frac{1}{(2x + 1) \left(\frac{1}{(2x+1)\sqrt{c_1-2x}} + \log(2x + 1) + 1 \right)} \right\} \right.$$

✓ **Maple** : cpu = 0.065 (sec), leaf count = 79

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

2.938 ODE No. 938

$$y'(x) = \frac{x^6 - 3x^5 + 3x^4y(x) + 4x^4 - 6x^3y(x) - 3x^3 + 3x^2y(x)^2 + 5x^2y(x) - x^2 - 3xy(x)^2 - 2xy(x) + y(x)}{x}$$

✓ **Mathematica** : cpu = 0.0685246 (sec), leaf count = 108

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{\frac{3x^2-3x+1}{x} + \frac{3y(x)}{x}}{\sqrt[3]{29}\sqrt[3]{\frac{1}{x^3}}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{1}{9} 29^{2/3} \left(\frac{1}{x^3} \right)^{2/3} \right]$$

✓ **Maple** : cpu = 0.035 (sec), leaf count = 39

$$\left\{ y(x) = -x^2 + x - \frac{1}{3} + \frac{29 \text{RootOf} \left(-81 \int^{-Z} (841 _a^3 - 27 _a + 27)^{-1} d_a + \ln(x) + 3 _C1 \right)}{9} \right\}$$

2.939 ODE No. 939

$$y'(x) = \frac{x^6 + 6x^5 - 12x^4y(x) + 12x^4 - 48x^3y(x) + 16x^3 + 48x^2y(x)^2 - 48x^2y(x) + 16x^2 + 96xy(x)^2 - 32xy(x) + 16x - 64}{16x^2 - 64y(x) + 32x - 64}$$

✓ **Mathematica** : cpu = 0.410457 (sec), leaf count = 136

$$\text{Solve} \left[\frac{2}{5} \text{RootSum} \left[\#1^4 + 4\#1^3 - 8\#1^2y(x) - 16\#1y(x) - 8\#1 + 16y(x)^2 + 16y(x) + 8\&, \frac{\#1^2(-\log(x) - \dots)}{\dots} \& \right] \right]$$

✓ **Maple** : cpu = 0.201 (sec), leaf count = 70

$$\left\{ x + \frac{2}{5} \ln \left(2 \left(y(x) - 1/4 x^2 - x/2 \right)^2 + 2y(x) - \frac{x^2}{2} - x + 1 \right) - \frac{2}{5} \arctan \left(-2y(x) + \frac{x^2}{2} + x - 1 \right) - \frac{4}{5} \ln \dots \right\}$$

2.940 ODE No. 940

$$y'(x) = \frac{x^3 \log^3(x) - 3x^2 y(x) \log^2(x) - x^2 + x^2 \log(x) - y(x)^3 - y(x)^2 - 2xy(x) + 3xy(x)^2 \log(x) + xy(x)}{x(-y(x) - x + x \log(x))}$$

✓ **Mathematica** : cpu = 0.0218901 (sec), leaf count = 80

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{x \left(-\frac{1}{x^2 \sqrt{c_1 - 2x}} - \frac{1}{x^2} \right)} - x + x \log(x) \right\}, \left\{ y(x) \rightarrow -\frac{1}{x \left(\frac{1}{x^2 \sqrt{c_1 - 2x}} - \frac{1}{x^2} \right)} - x + x \log(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.055 (sec), leaf count = 63

$$\left\{ y(x) = x \left(\ln(x) \sqrt{-C1 - 2x} - \ln(x) + 1 \right) \left(\sqrt{-C1 - 2x} - 1 \right)^{-1}, y(x) = x \left(\ln(x) \sqrt{-C1 - 2x} + \ln(x) \right) \right\}$$

2.941 ODE No. 941

$$y'(x) = \frac{x^6 - 12x^5 + 12x^4 y(x) + 48x^4 - 96x^3 y(x) - 72x^3 + 48x^2 y(x)^2 + 192x^2 y(x) + 32x^2 - 192xy(x)^2 - 16x^2 + 64y(x) - 64x + 64}{16x^2 + 64y(x) - 64x + 64}$$

✓ **Mathematica** : cpu = 0.377884 (sec), leaf count = 53

Solve[x - 8RootSum[11776#1^3 - 40#1 - 1&, #1 log (17664#1^2 - 1472#1 + 11x^2 + 44y(x) - 44x - 40

✓ **Maple** : cpu = 0.053 (sec), leaf count = 35

$$\left\{ y(x) = -\frac{x^2}{4} + x + \text{RootOf} \left(-x + \int^{-Z} \frac{1 + -a}{-a^3 - a - 1} d_a + -C1 \right) \right\}$$

2.942 ODE No. 942

$$y'(x) = \frac{-\exp\left(\frac{2(x-y(x))^3(y(x)+x)^3}{x^2-y(x)^2-1}\right) - x^2 - 2xy(x) - y(x)^2}{\exp\left(\frac{2(x-y(x))^3(y(x)+x)^3}{x^2-y(x)^2-1}\right) - x^2 - 2xy(x) - y(x)^2}$$

✗ **Mathematica** : cpu = 300.01 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.561 (sec), leaf count = 43

$$\left\{ y(x) = e^{\text{RootOf}\left(-Z + \int (e^{-Z})^2 - 2e^{-Z} x \left(e^2 \frac{a^3}{1+a} + a\right)^{-1} d_a + C1\right)} - x \right\}$$

2.943 ODE No. 943

$$y'(x) = \frac{x^6 - 6x^5 + 24x^4y(x) + 12x^4 - 96x^3y(x) - 24x^3 + 192x^2y(x)^2 + 96x^2y(x) + 32x^2 - 384xy(x)^2 - 64x^2 + 512y(x) - 128x + 512}{64x^2 + 512y(x) - 128x + 512}$$

✓ **Mathematica** : cpu = 0.422658 (sec), leaf count = 53

Solve[x - 16RootSum[6656#1^3 - 23#1 - 1&, #1 log(79872#1^2 - 18304#1 + 181x^2 + 1448y(x) - 362x)]]

✓ **Maple** : cpu = 0.053 (sec), leaf count = 40

$$\left\{ y(x) = -\frac{x^2}{8} + \frac{x}{4} + \text{RootOf}\left(-x + \int^{-Z} 4 \frac{1+a}{4a^3 - a - 1} d_a + C1\right) \right\}$$

2.944 ODE No. 944

$$y'(x) = \frac{a^3x^6 + 6a^2bx^5 + 12a^2x^4y(x) - 8a^2x^3 + 12ab^2x^4 + 48abx^3y(x) - 16abx^2 + 48ax^2y(x)^2 - 32axy(x) - 16ax^2 + 32bx + 64y(x) + 64}{16ax^2 + 32bx + 64y(x) + 64}$$

✓ **Mathematica** : cpu = 1.84986 (sec), leaf count = 233

Solve[x - 4RootSum[#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]]]

✓ **Maple** : cpu = 0.08 (sec), leaf count = 47

$$\left\{ y(x) = -\frac{ax^2}{4} - \frac{bx}{2} + \text{RootOf}\left(bx + 2 \int^{-Z} -\frac{b(1+a)}{2a^3 + ab + b} d_a + 2C1\right) \right\}$$

2.945 ODE No. 945

$$y'(x) = \frac{8a^3x^3 + 12a^2x^4 + 48a^2x^2y(x) + 6ax^5 + 48ax^3y(x) - 16ax^2 + 96axy(x)^2 + x^6 + 12x^4y(x) - 8x^3 + 32ax + 16x^2 + 64y(x) + 64}{32ax + 16x^2 + 64y(x) + 64}$$

✓ **Mathematica** : cpu = 1.40478 (sec), leaf count = 213

$$\text{Solve} \left[x - 4\text{RootSum} \left[\#1^6 + 6\#1^5a + 12\#1^4a^2 + 12\#1^4y(x) + 8\#1^3a^3 + 48\#1^3ay(x) + 48\#1^2a^2y(x) + \dots \right] \right]$$

✓ **Maple** : cpu = 0.065 (sec), leaf count = 41

$$\left\{ y(x) = -\frac{x^2}{4} - \frac{ax}{2} + \text{RootOf} \left(-x + \int^{-z} 2 \frac{1 + _a}{2 _a^3 + _a a + a} d_a + _C1 \right) \right\}$$

2.946 ODE No. 946

$$y'(x) = \frac{x(12e^{-x^2}x^2y(x)^2 + 8e^{-x^2}x^2y(x) - 8e^{-x^2}y(x) + 4e^{-2x^2}x^2 + 8e^{-x^2}x^2 - 8e^{-x^2} + e^{-3x^2}x^6 - 6e^{-2x^2}x^4)}{4e^{-x^2}x^2 - 8y(x) - 8}$$

✓ **Mathematica** : cpu = 0.0840112 (sec), leaf count = 150

$$\left\{ \left\{ y(x) \rightarrow \frac{e^{-3x^2}}{8 \left(\frac{1}{8}e^{-3x^2} - \frac{e^{-3x^2}}{\sqrt{c_1 - 64x^2}} \right)} - \frac{1}{2}e^{-x^2}(2e^{x^2} - x^2) \right\}, \left\{ y(x) \rightarrow \frac{e^{-3x^2}}{8 \left(\frac{e^{-3x^2}}{\sqrt{c_1 - 64x^2}} + \frac{1}{8}e^{-3x^2} \right)} - \frac{1}{2}e^{-x^2}(2e^{x^2} - x^2) \right\} \right\}$$

✓ **Maple** : cpu = 0.166 (sec), leaf count = 100

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

2.947 ODE No. 947

$$y'(x) = \frac{x^3 \sin(x) + x^2 y(x)^2 + 2x^2 y(x) \cos(x) + \frac{x^2}{2} + x^2 \cos(x) + \frac{1}{2} x^2 \cos(2x) + 2xy(x) - 2xy(x) \sin(x) + \dots}{x^3}$$

✓ **Mathematica** : cpu = 0.109395 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{c_1 - \log(x)} - \frac{-\sin(x) + x \cos(x) + 1}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.279 (sec), leaf count = 36

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

2.948 ODE No. 948

$$y'(x) = -\frac{216y(x)}{36x^2 + 4y(x)^8 + 12y(x)^7 + 33y(x)^6 + 60y(x)^5 - 24xy(x)^4 - 216y(x)^4 - 36xy(x)^3 - 252y(x)^3 - \dots}$$

✓ **Mathematica** : cpu = 0.263274 (sec), leaf count = 39

$$\text{Solve} \left[\frac{36}{y(x) (2y(x)^3 + 3y(x)^2 + 6y(x) + 6) - 6x} + \log(y(x)) = c_1, y(x) \right]$$

✓ **Maple** : cpu = 0.194 (sec), leaf count = 68

$$\left\{ y(x) = e^{\text{RootOf}(-12_C1 (e^{-Z})^4 - 2(e^{-Z})^4_Z - 18_C1 (e^{-Z})^3 - 3(e^{-Z})^3_Z - 36_C1 (e^{-Z})^2 - 6_Z (e^{-Z})^2 - 36_C1 e^{-Z} - 6_Z e^{-Z} + \dots)}$$

2.949 ODE No. 949

$$y'(x) = \frac{x^6 - 3x^5 + 3x^4 y(x) + x^4 - 6x^3 y(x) + 2x^3 + 3x^2 y(x)^2 + x^2 y(x) - 3x^2 - 3xy(x)^2 + xy(x) + y(x)^3}{x(x^2 + y(x) - x + 1)}$$

✓ **Mathematica** : cpu = 0.023322 (sec), leaf count = 76

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{x \left(\frac{1}{x} - \frac{1}{x \sqrt{c_1 - 2 \log(x)}} \right)} - x^2 + x - 1 \right\}, \left\{ y(x) \rightarrow \frac{1}{x \left(\frac{1}{x \sqrt{c_1 - 2 \log(x)}} + \frac{1}{x} \right)} - x^2 + x - 1 \right\} \right\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 97

$$\left\{ y(x) = -1 \left(\sqrt{-C1 - 2 \ln(x)} x^2 - \sqrt{-C1 - 2 \ln(x)} x - x^2 + x - 1 \right) \left(-1 + \sqrt{-C1 - 2 \ln(x)} \right)^{-1}, y(x) \right\}$$

2.950 ODE No. 950

$$y'(x) = \frac{a^3 x^6}{64} + \frac{3}{32} a^2 b x^5 + \frac{3}{16} a^2 x^4 y(x) + \frac{a^2 x^4}{16} + \frac{3}{16} a b^2 x^4 + \frac{3}{4} a b x^3 y(x) + \frac{1}{4} a b x^3 + \frac{3}{4} a x^2 y(x)^2 + \frac{1}{2} a x^2 y(x) - \frac{a x}{2} + b$$

✓ **Mathematica** : cpu = 0.177111 (sec), leaf count = 141

$$\text{Solve} \left[-\frac{1}{3} (27b + 58)^{2/3} \text{RootSum} \left[\#1^3 (27b + 58)^{2/3} - 3 \cdot 2^{2/3} \#1 + (27b + 58)^{2/3} \&, \frac{\log \left(\frac{\sqrt[3]{2} (\frac{1}{4} (3ax^2 + 6bx + 4) + 3)}{\sqrt[3]{27b + 58}} \right)}{2^{2/3} - \#1^2 (27b + 58)^{2/3}} \right] \right]$$

✓ **Maple** : cpu = 0.1 (sec), leaf count = 42

$$\left\{ y(x) = -\frac{ax^2}{4} - \frac{bx}{2} + \text{RootOf} \left(-x + 2 \int^{-Z} (2 _a^3 + 2 _a^2 + b + 2)^{-1} d_a + _C1 \right) \right\}$$

2.951 ODE No. 951

$$y'(x) = \frac{a^3 x^3}{8} + \frac{3a^2 x^4}{16} + \frac{3}{4} a^2 x^2 y(x) + \frac{a^2 x^2}{4} + \frac{3ax^5}{32} + \frac{3}{4} a x^3 y(x) + \frac{ax^3}{4} + \frac{3}{2} a x y(x)^2 + a x y(x) + \frac{x^6}{64} + \frac{3}{16} x^4 y(x) + \frac{x^4}{16}$$

✓ **Mathematica** : cpu = 0.1553 (sec), leaf count = 140

$$\text{Solve} \left[-\frac{1}{3} (27a + 58)^{2/3} \text{RootSum} \left[\#1^3 (27a + 58)^{2/3} - 3 \cdot 2^{2/3} \#1 + (27a + 58)^{2/3} \&, \frac{\log \left(\frac{\sqrt[3]{2} (\frac{1}{4} (6ax + 3x^2 + 4) + 3)}{\sqrt[3]{27a + 58}} \right)}{2^{2/3} - \#1^2 (27a + 58)^{2/3}} \right] \right]$$

✓ **Maple** : cpu = 0.081 (sec), leaf count = 41

$$\left\{ y(x) = -\frac{x^2}{4} - \frac{ax}{2} + \text{RootOf} \left(-x + 2 \int^{-Z} (2 _a^3 + 2 _a^2 + a + 2)^{-1} d_a + _C1 \right) \right\}$$

2.952 ODE No. 952

$$y'(x) = \frac{-x^2 \sqrt{x^2 + y(x)^2} + xy(x) \sqrt{x^2 + y(x)^2} + x^5 \left(-\sqrt{x^2 + y(x)^2}\right) + x^4 y(x) \sqrt{x^2 + y(x)^2} - x^4 \sqrt{x^2 + y(x)^2}}{x}$$

✓ **Mathematica** : cpu = 0.141082 (sec), leaf count = 189

$$\left\{ \left\{ y(x) \rightarrow \frac{x \left(-2e^{\sqrt{2}c_1 + \frac{\sqrt{2}x^5}{5} + \frac{x^4}{2\sqrt{2}} + \frac{x^2}{\sqrt{2}}} + e^{2\sqrt{2}c_1 + \frac{2\sqrt{2}x^5}{5} + \frac{x^4}{\sqrt{2}} + \sqrt{2}x^2} - 1 \right)}{2e^{\sqrt{2}c_1 + \frac{\sqrt{2}x^5}{5} + \frac{x^4}{2\sqrt{2}} + \frac{x^2}{\sqrt{2}}} + e^{2\sqrt{2}c_1 + \frac{2\sqrt{2}x^5}{5} + \frac{x^4}{\sqrt{2}} + \sqrt{2}x^2} - 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.317 (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

$$y'(x) = \frac{y(x) (x^4 \log^2(y(x)) + 2x^4 \log(x) \log(y(x)) + x^4 \log^2(x) + x^3 \log^2(y(x)) + 2x^3 \log(x) \log(y(x)) + x^3 \log^2(x))}{x}$$

✗ **Mathematica** : cpu = 1.65634 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] == ((-1 + Log[x] + x*Log[x]^2 + x^3*Log[x]^2 + x^4*Log[x]^2

✓ **Maple** : cpu = 0.441 (sec), leaf count = 145

$$\left\{ y(x) = 1 \left(x^{\frac{x^5}{4x^5+5x^4+10x^2+20}-C1} \right)^{-4} \left(x^{\frac{x^4}{4x^5+5x^4+10x^2+20}-C1} \right)^{-5} \left(x^{\frac{x^2}{4x^5+5x^4+10x^2+20}-C1} \right)^{-10} \left(x^{\frac{C1}{4x^5+5x^4+10x^2+20}-C1} \right)$$

2.954 ODE No. 954

$$y'(x) = \frac{\frac{24}{5}x^{7/2}y(x) - \frac{24x^{13/2}}{25} + \frac{8x^{7/2}}{5} - 8x^{3/2} - \frac{8x^9}{125} + \frac{12}{25}x^6y(x) + \frac{4x^6}{25} - \frac{24x^4}{5} - \frac{6}{5}x^3y(x)^2 - \frac{4}{5}x^3y(x) + \frac{6x^3}{5} + \frac{1}{5}}{x}$$

✓ **Mathematica** : cpu = 0.0963306 (sec), leaf count = 115

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{-6x^3 - 30\sqrt{x} + 5 + \frac{3y(x)}{x}}{\sqrt[3]{29} \sqrt[3]{\frac{1}{x^3}}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{1}{9} 29^{2/3} \left(\frac{1}{x^3} \right) \right]$$

✓ **Maple** : cpu = 0.098 (sec), leaf count = 53

$$\left\{ y(x) = \frac{1}{45} \left(18x^{7/2} + 145 \text{RootOf} \left(-81 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_a + \ln(x) + 3_C1 \right) \sqrt{x} - 1 \right) \right\}$$

2.955 ODE No. 955

$$y'(x) = \frac{-24x^{7/2}y(x) + \frac{24x^{13/2}}{5} + 14x^{7/2} + 40x^{3/2} + \frac{8x^9}{25} - \frac{12}{5}x^6y(x) + \frac{12x^6}{5} + 24x^4 + 6x^3y(x)^2 - 6x^3y(x) - \frac{1}{5}}{x(2x^3 - 5y(x) + 10\sqrt{x} - 5)}$$

✓ **Mathematica** : cpu = 0.041723 (sec), leaf count = 112

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{5} (2x^3 + 10\sqrt{x} - 5) - \frac{1}{125x \left(-\frac{1}{x\sqrt{c_1 - 31250 \log(x)}} - \frac{1}{125x} \right)} \right\}, \left\{ y(x) \rightarrow \frac{1}{5} (2x^3 + 10\sqrt{x} - 5) - \frac{1}{125x \left(-\frac{1}{x\sqrt{c_1 - 31250 \log(x)}} - \frac{1}{125x} \right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.112 (sec), leaf count = 111

$$\left\{ y(x) = \frac{1}{5} \left(2\sqrt{-C1 - 2 \ln(x)}x^3 - 2x^3 + 10\sqrt{-C1 - 2 \ln(x)}\sqrt{x} - 10\sqrt{x} + 5 \right) \left(-1 + \sqrt{-C1 - 2 \ln(x)} \right) \right\}$$

2.956 ODE No. 956

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

✓ **Mathematica** : cpu = 0.213525 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{\left(c_1 e^{\frac{x^4}{4}} + 1 \right) (\log(x) + 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.074 (sec), leaf count = 197

$$\left\{ y(x) = 1 e^{-\frac{x^4}{4}} \left((\ln(x))^2 e^{\frac{-x^4 \ln(x) - x^4 + 8 (\ln(x))^2 - 4 \ln(\ln(x)+1) \ln(x) - 4 \ln(\ln(x)+1)}{4 \ln(x)+4}} x^{-2 \frac{\ln(x)}{\ln(x)+1}} + 2 \ln(x) e^{1/4 \frac{-x^4 \ln(x) - x^4 + 8 (\ln(x))^2 - 4 \ln(\ln(x)+1) \ln(x) - 4 \ln(\ln(x)+1)}{4 \ln(x)+4}} \right) \right\}$$

2.957 ODE No. 957

$$y'(x) = \frac{y(x) \left(y(x) e^{\frac{2 \log^2(x)}{\log(x)+1}} x^{\frac{2}{\log(x)+1}+3} + y(x) e^{\frac{2 \log^2(x)}{\log(x)+1}} \log^2(x) x^{\frac{2}{\log(x)+1}+3} + 2y(x) e^{\frac{2 \log^2(x)}{\log(x)+1}} \log(x) x^{\frac{2}{\log(x)+1}+3} - e^{\frac{2 \log^2(x)}{\log(x)+1}} \right)}{x(\log(x) + 1)}$$

✓ **Mathematica** : cpu = 0.204471 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{\left(c_1 e^{\frac{x^5}{5}} + 1 \right) (\log(x) + 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.054 (sec), leaf count = 197

$$\left\{ y(x) = 1 e^{-\frac{x^5}{5}} \left((\ln(x))^2 e^{\frac{-x^5 \ln(x) - x^5 + 10 (\ln(x))^2 - 5 \ln(\ln(x)+1) \ln(x) - 5 \ln(\ln(x)+1)}{5 \ln(x)+5}} x^{-2 \frac{\ln(x)}{\ln(x)+1}} + 2 \ln(x) e^{1/5 \frac{-x^5 \ln(x) - x^5 + 10 (\ln(x))^2 - 5 \ln(\ln(x)+1) \ln(x) - 5 \ln(\ln(x)+1)}{5 \ln(x)+5}} \right) \right\}$$

2.958 ODE No. 958

$$y'(x) = \frac{2xy(x)^3 + y(x)^3 + 2xy(x)^2 + y(x)^2 + 6xy(x) \log^2(2x + 1) + 3y(x) \log^2(2x + 1) + 6xy(x)^2 \log(2x + 1)}{x}$$

✓ **Mathematica** : cpu = 0.064488 (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 = 0.049 (sec), leaf count = 40

$$\left\{ y(x) = -\ln(2x + 1) - \frac{1}{3} + \frac{29 \text{RootOf}(-81 \int^{-Z} (841 - a^3 - 27 - a + 27)^{-1} d_a + x + 3 - C1)}{9} \right\}$$

2.959 ODE No. 959

$$y'(x) = \frac{\csc\left(\frac{y(x)}{2x}\right) \sec\left(\frac{y(x)}{2x}\right) \sec\left(\frac{y(x)}{x}\right) \left(x^3 \sin\left(\frac{y(x)}{2x}\right) \sin\left(\frac{y(x)}{x}\right) \cos\left(\frac{y(x)}{2x}\right) - \frac{1}{2}y(x) \sin\left(\frac{y(x)}{x}\right) + \frac{1}{2}y(x) \sin\left(\frac{y(x)}{2x}\right)\right)}{x}$$

✓ **Mathematica** : cpu = 0.0459135 (sec), leaf count = 20

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

✓ **Maple** : cpu = 0.063 (sec), leaf count = 16

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

2.960 ODE No. 960

$$y'(x) = \frac{\csc\left(\frac{y(x)}{2x}\right) \sec\left(\frac{y(x)}{2x}\right) \sec\left(\frac{y(x)}{x}\right) \left(x^2 \sin\left(\frac{y(x)}{2x}\right) \sin\left(\frac{y(x)}{x}\right) \cos\left(\frac{y(x)}{2x}\right) - \frac{1}{2}y(x) \sin\left(\frac{y(x)}{x}\right) + \frac{1}{2}y(x) \sin\left(\frac{y(x)}{2x}\right)\right)}{x}$$

✓ **Mathematica** : cpu = 0.0362459 (sec), leaf count = 14

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

✓ **Maple** : cpu = 0.049 (sec), leaf count = 16

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

2.961 ODE No. 961

$$y'(x) = \frac{\exp(-2x^6 + 6x^4y(x)^2 + 2x^4 - 6x^2y(x)^4 - 4x^2y(x)^2 + 2y(x)^6 + 2y(x)^4 + 2) + x^2 + 2xy(x) + y(x)}{-\exp(-2x^6 + 6x^4y(x)^2 + 2x^4 - 6x^2y(x)^4 - 4x^2y(x)^2 + 2y(x)^6 + 2y(x)^4 + 2) + x^2 + 2xy(x) + y(x)}$$

✗ **Mathematica** : cpu = 300.001 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.392 (sec), leaf count = 45

$$\left\{ y(x) = e^{\text{RootOf}\left(-Z + \int (e^{-Z})^2 - 2e^{-Z}x(e^2 - a^3 + 2 - a^2 + 2 + a)^{-1} d_a + C1\right)} - x \right\}$$

2.962 ODE No. 962

$$y'(x) = \frac{4(a-1)(a+1)x(a^2x^2 - a^8x^6 - 4a^6x^6 - 3a^6x^4y(x)^2 + 6a^4x^6 + 9a^4x^4y(x)^2 + 3a^4x^2y(x)^4 - 4a^2x^6 - 9a^2x^4y(x)^2 - 6a^2x^2y(x)^4)}{(a-1)(a+1)}$$

✓ **Mathematica** : cpu = 5.8829 (sec), leaf count = 1191

$$\left\{ \left\{ y(x) \rightarrow \text{Root}\left[2x^4a^8 - 8x^4a^6 + e^{c_1}x^4a^4 + 11x^4a^4 - 2e^{c_1}x^4a^2 - 6x^4a^2 + 4x^2a^2 + (2a^2 - 2)\#1^5 + e^{c_1}x^4\right] \right\} \right\}$$

✓ **Maple** : cpu = 1.894 (sec), leaf count = 79

$$\left\{ -\frac{y(x)}{(a-1)(a+1)} + 2\frac{1}{(a^2-1)^2(a^2x^2 - x^2 - (y(x))^2)^2} - 2\frac{1}{(a^2-1)^2(a^2x^2 - x^2 - (y(x))^2)} + C1 = 0 \right\}$$

2.963 ODE No. 963

$$y'(x) = \frac{-\frac{5x^3}{2} + \frac{15}{4}x^3 \cos(x) - \frac{3}{2}x^3 \cos(2x) + \frac{1}{4}x^3 \cos(3x) + \frac{9}{2}x^2y(x) - 6x^2y(x) \cos(x) + \frac{3}{2}x^2y(x) \cos(2x) + \dots}{\dots}$$

✓ **Mathematica** : cpu = 0.125338 (sec), leaf count = 108

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{\frac{3y(x)}{x} + \frac{-3x+3x \cos(x)+1}{x}}{\sqrt[3]{29} \sqrt[3]{\frac{1}{x^3}}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{1}{9} 29^{2/3} \left(\frac{1}{x^3} \right) \right]$$

✓ **Maple** : cpu = 0.253 (sec), leaf count = 39

$$\left\{ y(x) = -\cos(x)x + x - \frac{1}{3} + \frac{29 \text{RootOf} \left(-81 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_a + \ln(x) + 3_C1 \right)}{9} \right\}$$

2.964 ODE No. 964

$$y'(x) = \frac{-a^8x^6 - 4a^6x^6 - 3a^6x^4y(x)^2 - 2a^6x^4 + 6a^4x^6 + 9a^4x^4y(x)^2 + 6a^4x^4 + 3a^4x^2y(x)^4 + 4a^4x^2y(x)^2 - \dots}{\dots}$$

✓ **Mathematica** : cpu = 5.23847 (sec), leaf count = 264

$$\text{Solve} \left[\frac{y(x)}{(a-1)(a+1)} - \frac{8\text{RootSum} \left[-\#1^3a^6 + 3\#1^3a^4 - 3\#1^3a^2 + \#1^3 + 3\#1^2a^4y(x)^2 + 2\#1^2a^4 - 6\#1 \right]}{\dots} \right]$$

✓ **Maple** : cpu = 3.126 (sec), leaf count = 80

$$\left\{ \frac{y(x)}{(a-1)(a+1)} + 4 \frac{1}{a^4 - 2a^2 + 1} \sum_{R=\text{RootOf}(-Z^3+2-Z^2+8)} \frac{\ln(-a^2x^2 + x^2 + (y(x))^2 - R)}{3R^2 + 4R} - C1 = 0 \right\}$$

2.965 ODE No. 965

$$y'(x) = \frac{\csc\left(\frac{y(x)}{2x}\right) \sec\left(\frac{y(x)}{2x}\right) \sec\left(\frac{y(x)}{x}\right) \left(x^4 \sin\left(\frac{y(x)}{2x}\right) \sin\left(\frac{y(x)}{x}\right) \cos\left(\frac{y(x)}{2x}\right) + x^3 \sin\left(\frac{y(x)}{2x}\right) \sin\left(\frac{y(x)}{x}\right) \cos\left(\frac{y(x)}{x}\right)\right)}{\dots}$$

✓ **Mathematica** : cpu = 0.0580835 (sec), leaf count = 29

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

✓ **Maple** : cpu = 0.113 (sec), leaf count = 25

$$\left\{ y(x) = \frac{x}{2} \arccos \left(e^{\frac{2x^3}{3}} e^{x^2} - C_1 x^2 + 1 \right) \right\}$$

2.966 ODE No. 966

$$y'(x) = - \frac{\dots}{216x^3 - 216x^2y(x)^4 - 324x^2y(x)^3 - 648x^2y(x)^2 - 648x^2y(x) + 216x^2 - 8y(x)^{12} - 36y(x)^{11} - \dots}$$

✓ **Mathematica** : cpu = 0.446352 (sec), leaf count = 292

$$\text{Solve} \left[72 \text{RootSum} \left[-216\#1^3 + 216\#1^2y(x)^4 + 324\#1^2y(x)^3 + 648\#1^2y(x)^2 + 648\#1^2y(x) - 216\#1^2 - \dots \right] \right]$$

✓ **Maple** : cpu = 0.914 (sec), leaf count = 50

$$\left\{ y(x) = e^{\text{RootOf} \left(-_Z-6 \int^{-1/3} (e^{-Z})^4 -_{1/2} (e^{-Z})^3 - (e^{-Z})^2 + x - e^{-Z} (-_a^3 + _a^2 + 1)^{-1} d_a + _C1 \right)} \right\}$$

2.967 ODE No. 967

$$y'(x) = - \frac{x(64x^9 - 288x^8y(x) - 96x^8 + 432x^7y(x)^2 + 288x^7y(x) - 144x^7 - 216x^6y(x)^3 - 216x^6y(x)^2 - \dots)}{\dots}$$

✓ **Mathematica** : cpu = 0.135984 (sec), leaf count = 151

$$\text{Solve} \left[-\frac{29}{3} \text{RootSum} \left[-29\#1^3 + 3\sqrt[3]{29}\#1 - 29\&, \frac{\log \left(\frac{\frac{3xy(x)}{x^2+1} + \frac{-4x^4+2x^3+5x}{2(x^2+1)^2}}{\sqrt[3]{29} \sqrt[3]{\frac{x^3}{(x^2+1)^3}}}} - \#1 \right)}{\sqrt[3]{29} - 29\#1^2} \& \right] = c_1 + \frac{29^{2/3} \left(\frac{x^3}{(x^2+1)} \right)}{18x^2 + 18} \right]$$

✓ **Maple** : cpu = 0.089 (sec), leaf count = 90

$$\left\{ y(x) = \frac{58 \text{RootOf} \left(-162 \int^{-Z} (841_a^3 - 27_a + 27)^{-1} d_a + \ln(x^2 + 1) + 6_C1 \right) x^2 + 12x^3 - 6x^2}{18x^2 + 18} \right\}$$

2.968 ODE No. 968

$$y'(x) = \frac{\csc \left(\frac{y(x)}{2x} \right) \sec \left(\frac{y(x)}{2x} \right) \sec \left(\frac{y(x)}{x} \right) \left(x^4 \sin \left(\frac{y(x)}{2x} \right) \sin \left(\frac{y(x)}{x} \right) \cos \left(\frac{y(x)}{2x} \right) - \frac{1}{2}xy(x) \sin \left(\frac{y(x)}{x} \right) - \frac{1}{2}y(x) \sin \left(\frac{y(x)}{x} \right) \right)}{18x^2 + 18}$$

✓ **Mathematica** : cpu = 0.0833949 (sec), leaf count = 30

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

✓ **Maple** : cpu = 0.148 (sec), leaf count = 45

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

2.969 ODE No. 969

$$y'(x) = \frac{\csc \left(\frac{y(x)}{2x} \right) \sec \left(\frac{y(x)}{2x} \right) \sec \left(\frac{y(x)}{x} \right) \left(-\frac{1}{2}xy(x) \sin \left(\frac{y(x)}{x} \right) - \frac{1}{2}y(x) \sin \left(\frac{y(x)}{x} \right) + x \sin \left(\frac{y(x)}{2x} \right) \sin \left(\frac{y(x)}{x} \right) \cos \left(\frac{y(x)}{2x} \right) \right)}{18x^2 + 18}$$

✓ **Mathematica** : cpu = 0.0584924 (sec), leaf count = 19

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

✓ **Maple** : cpu = 0.141 (sec), leaf count = 27

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

2.970 ODE No. 970

$$y'(x) = -\frac{216x^3 - 216x^2y(x)^4 - 324x^2y(x)^3 - 648x^2y(x)^2 - 648x^2y(x) - 8y(x)^{12} - 36y(x)^{11} - 126y(x)^{10}}{216x^3 - 216x^2y(x)^4 - 324x^2y(x)^3 - 648x^2y(x)^2 - 648x^2y(x) - 8y(x)^{12} - 36y(x)^{11} - 126y(x)^{10}}$$

✓ **Mathematica** : cpu = 0.49158 (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 = 0.899 (sec), leaf count = 183

$$\left\{ x - \frac{1}{-6_C1 + 6 \ln(y(x))} \left(2(y(x))^4 \ln(y(x)) - 2(y(x))^4_C1 + 3(y(x))^3 \ln(y(x)) - 3(y(x))^3_C1 + \dots \right) \right\}$$

2.971 ODE No. 971

$$y'(x) = \frac{(xy(x) + 1)^3}{x^5}$$

✓ **Mathematica** : cpu = 0.105308 (sec), leaf count = 157

$$\text{Solve} \left[\frac{1}{3} \log \left(\frac{\frac{3}{x^3} + \frac{3y(x)}{x^2}}{3 \sqrt[3]{-\frac{1}{x^6}}} + 1 \right) - \frac{1}{6} \log \left(\frac{\left(\frac{3}{x^3} + \frac{3y(x)}{x^2} \right)^2}{9 \left(-\frac{1}{x^6} \right)^{2/3}} - \frac{\frac{3}{x^3} + \frac{3y(x)}{x^2}}{3 \sqrt[3]{-\frac{1}{x^6}}} + 1 \right) + \frac{\tan^{-1} \left(\frac{2 \left(\frac{3}{x^3} + \frac{3y(x)}{x^2} \right) - 1}{\frac{3 \sqrt[3]{-\frac{1}{x^6}}}{\sqrt{3}}}}{\sqrt{3}} \right)}{\sqrt{3}} = c \right]$$

✓ **Maple** : cpu = 0.249 (sec), leaf count = 88

$$\left\{ y(x) = \frac{\sqrt{3}}{6x} \left(\sqrt{3} \sqrt[3]{-x^{-6}} x^3 + 3 \tan \left(\text{RootOf} \left(-18x^3(-x^{-6})^{2/3} - 6_Z \sqrt{3} - \ln \left(\frac{(\sqrt{3} + \tan(_Z))^6}{((\tan(_Z))^2 + 1)^3} \right) \right) \right) \right)$$

2.972 ODE No. 972

$$y'(x) = \frac{x(-2x^4 + 2x^2y(x) - x^2 + 1)}{y(x) - x^2}$$

✓ **Mathematica** : cpu = 0.0263107 (sec), leaf count = 32

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(W \left(-e^{c_1 + x^4 - 2x^2 - 1} \right) + 1 \right) + x^2 \right\} \right\}$$

✓ **Maple** : cpu = 0.069 (sec), leaf count = 27

$$\left\{ y(x) = x^2 + \frac{1}{2} \text{lambertW} \left(-2 \frac{e^{x^4} - C1 e^{-1}}{(e^{x^2})^2} \right) + \frac{1}{2} \right\}$$

2.973 ODE No. 973

$$y'(x) = e^{-2bx}y(x) (e^{bx}y(x) + e^{2bx} + y(x)^2)$$

✓ **Mathematica** : cpu = 0.1731 (sec), leaf count = 146

$$\text{Solve} \left[-\frac{1}{3}(9b-7)^{2/3} \text{RootSum} \left[\#1^3(9b-7)^{2/3} - 9\#1b + 6\#1 + (9b-7)^{2/3}\&, \frac{\log \left(\frac{3e^{-2bx}y(x)+e^{-bx}}{\sqrt[3]{(9b-7)e^{-3bx}}} - \#1 \right)}{\#1^2(-9b-7)^{2/3} + 3b} \right] \right]$$

✓ **Maple** : cpu = 0.338 (sec), leaf count = 135

$$\left\{ y(x) = -\frac{1}{2} \tan \left(\text{RootOf} \left(-\ln \left((4(\tan(_Z))^2 b - 3(\tan(_Z))^2 + 4b - 3) \left(\tan(_Z) \sqrt{-(e^{bx})^2 (4b - \dots} \right) \right) \right) \right) \right.$$

2.974 ODE No. 974

$$y'(x) = -x^6 + 3x^4y(x) - 3x^2y(x)^2 + y(x)^3 + 2x$$

✓ **Mathematica** : cpu = 0.0111374 (sec), leaf count = 39

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

✓ **Maple** : cpu = 0.038 (sec), leaf count = 57

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

2.975 ODE No. 975

$$y'(x) = \frac{x^6}{27} + \frac{1}{3}x^4y(x) + x^2y(x)^2 + y(x)^3 - \frac{2x}{3}$$

✓ **Mathematica** : cpu = 0.0124099 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{\sqrt{c_1 - 2x}} - \frac{x^2}{3} \right\}, \left\{ y(x) \rightarrow \frac{1}{\sqrt{c_1 - 2x}} - \frac{x^2}{3} \right\} \right\}$$

✓ **Maple** : cpu = 0.041 (sec), leaf count = 59

$$\left\{ y(x) = -\frac{1}{3} \left(x^2 \sqrt{-54_C1 - 2x} - 3 \right) \frac{1}{\sqrt{-54_C1 - 2x}}, y(x) = -\frac{1}{3} \left(x^2 \sqrt{-54_C1 - 2x} + 3 \right) \frac{1}{\sqrt{-54_C1 - 2x}} \right\}$$

2.976 ODE No. 976

$$y'(x) = \frac{y(x)(x^7y(x)^2 + x^4y(x) + x - 3)}{x}$$

✓ **Mathematica** : cpu = 0.0803963 (sec), leaf count = 101

$$\text{Solve} \left[-\frac{7}{3} \text{RootSum} \left[-7\#1^3 + 6\sqrt[3]{-7}\#1 - 7\&, \frac{\log \left(\frac{3x^6y(x)+x^3}{\sqrt[3]{7}\sqrt[3]{-x^9}} - \#1 \right)}{2\sqrt[3]{-7} - 7\#1^2} \& \right] = c_1 + \frac{7^{2/3}(-x^9)^{2/3}}{9x^5}, y(x) \right]$$

✓ **Maple** : cpu = 0.237 (sec), leaf count = 57

$$\left\{ y(x) = \frac{1}{2x^3} \left(\sqrt{3} \tan \left(\text{RootOf} \left(-\sqrt{3} \ln \left(\frac{9(\tan(_Z))^2 + 9}{7(\sqrt{3} - 3 \tan(_Z))^2} \right) + 3\sqrt{3}_C1 - 2\sqrt{3}x - 2_Z \right) \right) \right) - \dots \right\}$$

2.977 ODE No. 977

$$y'(x) = e^{2x^2}xy(x) \left(e^{-x^2}y(x) + e^{-2x^2} + y(x)^2 \right)$$

✓ **Mathematica** : cpu = 0.198181 (sec), leaf count = 139

$$\text{Solve} \left[-\frac{25}{3} \text{RootSum} \left[-25\#1^3 + 24\sqrt[3]{-15}^{2/3}\#1 - 25\&, \frac{\log \left(\frac{3e^{2x^2}xy(x)+e^{x^2}x}{5^{2/3}\sqrt[3]{-e^{3x^2}x^3}} - \#1 \right)}{8\sqrt[3]{-15}^{2/3} - 25\#1^2} \& \right] = c_1 - \frac{5\sqrt[3]{5}e^{x^2}x^3}{18\sqrt[3]{-e^{3x^2}x^3}} \right]$$

✓ **Maple** : cpu = 0.209 (sec), leaf count = 122

$$\left\{ y(x) = \frac{1}{2e^{x^2}} \left(\sqrt{11} \tan \left(\text{RootOf} \left(-4\sqrt{11}x^2 + 8 \ln \left(-\frac{36\sqrt{11}}{11} + 36 \tan(_Z) \right) \right) \sqrt{11} - 4 \ln \left(\frac{2592\sqrt{11}}{\dots} \right) \right) \right.$$

2.978 ODE No. 978

$$y'(x) = \frac{y(x)(x^2 + xy(x) + y(x)^2 + x)}{x^2}$$

✓ **Mathematica** : cpu = 0.048197 (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 = 0.169 (sec), leaf count = 71

$$\left\{ y(x) = -\frac{x}{2} + \frac{\sqrt{3}x}{2} \tan \left(\text{RootOf} \left(-\sqrt{3} \ln(3) - \sqrt{3} \ln \left(\frac{4}{3 + 3(\tan(_Z))^2} \right) \right) - 2\sqrt{3} \ln \left(-1/6\sqrt{3} + 1/2 \right) \right) \right.$$

2.979 ODE No. 979

$$y'(x) = \frac{-x^3 + 3x^2y(x) - 3xy(x)^2 + y(x)^3 + x}{x}$$

✓ **Mathematica** : cpu = 0.012186 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow x - \frac{1}{\sqrt{c_1 - 2 \log(x)}} \right\}, \left\{ y(x) \rightarrow \frac{1}{\sqrt{c_1 - 2 \log(x)}} + x \right\} \right\}$$

✓ **Maple** : cpu = 0.052 (sec), leaf count = 57

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

2.980 ODE No. 980

$$y'(x) = \frac{x^3 y(x)^3 + 6x^2 y(x)^2 + 12xy(x) + 2x + 8}{x^3}$$

✓ **Mathematica** : cpu = 0.0130608 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{\sqrt{c_1 - 2x}} - \frac{2}{x} \right\}, \left\{ y(x) \rightarrow \frac{1}{\sqrt{c_1 - 2x}} - \frac{2}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.018 (sec), leaf count = 35

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

2.981 ODE No. 981

$$y'(x) = \frac{a^3 x^3 y(x)^3 + 3a^2 x^2 y(x)^2 + a^2 x + 3axy(x) + 1}{a^3 x^3}$$

✓ **Mathematica** : cpu = 0.0174964 (sec), leaf count = 49

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{ax} - \frac{1}{\sqrt{c_1 - 2x}} \right\}, \left\{ y(x) \rightarrow \frac{1}{\sqrt{c_1 - 2x}} - \frac{1}{ax} \right\} \right\}$$

✓ **Maple** : cpu = 0.025 (sec), leaf count = 41

$$\left\{ y(x) = -\frac{1}{\sqrt{-C1 - 2x}} - \frac{1}{ax}, y(x) = \frac{1}{\sqrt{-C1 - 2x}} - \frac{1}{ax} \right\}$$

2.982 ODE No. 982

$$y'(x) = \frac{1}{2} e^{-\frac{x^2}{2}} y(x) \left(2e^{\frac{x^2}{4}} y(x) + 2e^{\frac{x^2}{2}} + e^{\frac{x^2}{2}} x + 2y(x)^2 \right)$$

✓ **Mathematica** : cpu = 0.106504 (sec), leaf count = 132

$$\text{Solve} \left[-\frac{7}{3} \text{RootSum} \left[-7\#1^3 + 6\sqrt{-7}\#1 - 7\&, \frac{\log \left(\frac{3e^{-\frac{x^2}{2}} y(x) + e^{-\frac{x^2}{4}}}{\sqrt[3]{7}\sqrt[3]{-e^{-\frac{3x^2}{4}}}} - \#1 \right)}{2\sqrt[3]{-7} - 7\#1^2} \& \right] = c_1 + \frac{1}{9} 7^{2/3} e^{\frac{x^2}{2}} \left(-e^{-\frac{3x^2}{4}} \right) \right]$$

✓ **Maple** : cpu = 0.431 (sec), leaf count = 187

$$\left\{ \frac{1}{3} \ln \left(\frac{324 (y(x))^2 (e^{-\frac{x^2}{2}})^2 (e^{\frac{x^2}{4}})^2}{7} + \frac{216 y(x) e^{-\frac{x^2}{2}} (e^{\frac{x^2}{4}})^2 e^{-\frac{x^2}{4}}}{7} + \frac{36 (e^{-\frac{x^2}{4}})^2 (e^{\frac{x^2}{4}})^2}{7} + \frac{108 y(x) e^{\frac{x^2}{4}} e^{-\frac{x^2}{2}}}{7} \right) \right.$$

2.983 ODE No. 983

$$y'(x) = \frac{-x^3 + 3x^2y(x) + x^2 - 3xy(x)^2 + y(x)^3}{(x-1)(x+1)}$$

✓ **Mathematica** : cpu = 0.254323 (sec), leaf count = 238

$$\text{Solve} \left[\frac{1}{3} \log \left(\frac{\frac{3y(x)}{x^2-1} - \frac{3x}{x^2-1}}{3 \sqrt[3]{\frac{1}{(x-1)^3(x+1)^3}}} + 1 \right) - \frac{1}{6} \log \left(\frac{\left(\frac{3y(x)}{x^2-1} - \frac{3x}{x^2-1} \right)^2}{9 \left(\frac{1}{(x-1)^3(x+1)^3} \right)^{2/3}} - \frac{\frac{3y(x)}{x^2-1} - \frac{3x}{x^2-1}}{3 \sqrt[3]{\frac{1}{(x-1)^3(x+1)^3}}} + 1 \right) + \frac{\tan^{-1} \left(\frac{2 \left(\frac{3y(x)}{x^2-1} - \frac{3x}{x^2-1} \right)}{3 \sqrt[3]{\frac{1}{(x-1)^3(x+1)^3}}} \right)}{\sqrt{\frac{1}{(x-1)^3(x+1)^3}} \right]$$

✓ **Maple** : cpu = 0.278 (sec), leaf count = 469

$$\left\{ y(x) = \frac{\sqrt{3}}{6} \left(\sqrt{3} \sqrt[3]{\frac{1}{(1+x)^3(x-1)^3}} x^2 + 3 \sqrt[3]{\frac{1}{(1+x)^3(x-1)^3}} \tan \left(\text{RootOf} \left(-18 \ln(1+x) \left(\frac{1}{(1+x)^3} \right) \right) \right) \right) \right.$$

2.984 ODE No. 984

$$y'(x) = \frac{e^{-2x}(x-1)y(x)(x^2y(x)^2 + e^xxy(x) + e^{2x})}{x}$$

✓ **Mathematica** : cpu = 3.0444 (sec), leaf count = 428

$$\text{Solve} \left[\frac{\sqrt[3]{2} \left(\frac{3e^{-2x}x(x-1)y(x)+e^{-x}(x-1)}{\sqrt[3]{2} \sqrt[3]{e^{-3x}(x-1)^3}} + 2^{2/3} \right) \left(2^{2/3} - \frac{2^{2/3} (3e^{-2x}x(x-1)y(x)+e^{-x}(x-1))}{\sqrt[3]{e^{-3x}(x-1)^3}} \right)}{9 \left(-\frac{e^{3x}(3e^{-2x}x(x-1)y(x)+e^{-x}(x-1))}{(x-1)} \right)} \right]$$

✓ **Maple** : cpu = 0.281 (sec), leaf count = 40

$$\left\{ y(x) = \frac{1}{9x} e^{\text{RootOf}\left(-e^{-Z} \ln\left(\frac{x(e^{-Z}+9)}{2}\right) + 3_C1 e^{-Z} + _Z e^{-Z} + e^{-Z} x + 9\right) + x} \right\}$$

2.985 ODE No. 985

$$y'(x) = \frac{(xy(x) + 1)(x^2y(x)^2 + x^2y(x) + x^2 + 2xy(x) + x + 1)}{x^5}$$

✓ **Mathematica** : cpu = 0.222959 (sec), leaf count = 103

$$\text{Solve} \left[-\frac{17}{3} \text{RootSum} \left[-17\#1^3 + 3\sqrt[3]{-34}\#1 - 17\&, \frac{\log\left(\frac{x+3+\frac{3y(x)}{x^2}}{\sqrt[3]{34}\sqrt[3]{-\frac{1}{x^6}}} - \#1\right)}{\sqrt[3]{-34} - 17\#1^2} \& \right] = c_1 - \frac{1}{9} 34^{2/3} \left(-\frac{1}{x^6}\right)^{2/3} \right]$$

✓ **Maple** : cpu = 0.042 (sec), leaf count = 43

$$\left\{ y(x) = \frac{17 \text{RootOf}\left(162 \int^{-Z} (289_a^3 + 54_a - 54)^{-1} d_a x + 3_C1 x + 2\right) x - 3x - 9}{9x} \right\}$$

2.986 ODE No. 986

$$y'(x) = \frac{-x^3 \log^3(x) + 3x^2y(x) \log^2(x) + x^2 + y(x)^3 + xy(x) - 3xy(x)^2 \log(x)}{x^2}$$

✓ **Mathematica** : cpu = 0.0157624 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow x \log(x) - \frac{x}{\sqrt{c_1 - 2x}} \right\}, \left\{ y(x) \rightarrow \frac{x}{\sqrt{c_1 - 2x}} + x \log(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.028 (sec), leaf count = 36

$$\left\{ y(x) = -x \frac{1}{\sqrt{-C1 - 2x}} + x \ln(x), y(x) = x \frac{1}{\sqrt{-C1 - 2x}} + x \ln(x) \right\}$$

2.987 ODE No. 987

$$y'(x) = \frac{y(x)}{x} - F(x) (y(x)^2 - ax^2)$$

✓ **Mathematica** : cpu = 0.096177 (sec), leaf count = 40

$$\left\{ \left\{ y(x) \rightarrow \sqrt{ax} \tanh \left(\sqrt{a} \int_1^x K[1] F(K[1]) dK[1] + \sqrt{a} c_1 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.045 (sec), leaf count = 26

$$\left\{ y(x) = \tanh \left(\int F(x) x dx \sqrt{a} + _C1 \sqrt{a} \right) x \sqrt{a} \right\}$$

2.988 ODE No. 988

$$y'(x) = \frac{y(x)}{x} - F(x) (-x^2 - 2xy(x) + y(x)^2)$$

✓ **Mathematica** : cpu = 0.290179 (sec), leaf count = 104

$$\left\{ \left\{ y(x) \rightarrow -\frac{x(-\exp(2\sqrt{2}(\int_1^x K[1](-F(K[1])) dK[1] + c_1)) + \sqrt{2} \exp(2\sqrt{2}(\int_1^x K[1](-F(K[1])) dK[1]))}{\exp(2\sqrt{2}(\int_1^x K[1](-F(K[1])) dK[1] + c_1)) + 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.037 (sec), leaf count = 29

$$\left\{ y(x) = \frac{x(\sqrt{2} + 2 \tanh((\int F(x) x dx + _C1) \sqrt{2})) \sqrt{2}}{2} \right\}$$

2.989 ODE No. 989

$$y'(x) = \frac{y(x)}{x} - F(x) (-ay(x)^2 - bx^2)$$

✓ **Mathematica** : cpu = 0.10304 (sec), leaf count = 55

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt{bx} \tan \left(\sqrt{a}\sqrt{b} \int_1^x K[1] F(K[1]) dK[1] + \sqrt{a}\sqrt{bc_1} \right)}{\sqrt{a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.039 (sec), leaf count = 35

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

2.990 ODE No. 990

$$y'(x) = 2x - F(x) (-x^4 + 2x^2y(x) - y(x)^2 + 1)$$

✓ **Mathematica** : cpu = 0.460755 (sec), leaf count = 49

$$\left\{ \left\{ y(x) \rightarrow \frac{e^{\int_1^x 2F(K[5]) dK[5]}}{c_1 - \frac{1}{2} e^{\text{Integrate}[2F(K[5]),\{K[5],1,x\},\text{Assumptions} \rightarrow \text{True}]}} + x^2 + 1 \right\} \right\}$$

✓ **Maple** : cpu = 0.505 (sec), leaf count = 46

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

2.991 ODE No. 991

$$y'(x) = \frac{y(x)}{x} - F(x) (x^2 + 2xy(x) - y(x)^2)$$

✓ **Mathematica** : cpu = 0.2524 (sec), leaf count = 101

$$\left\{ \left\{ y(x) \rightarrow -\frac{x(-\exp(2\sqrt{2}(\int_1^x K[1]F(K[1]) dK[1] + c_1)) + \sqrt{2} \exp(2\sqrt{2}(\int_1^x K[1]F(K[1]) dK[1] + c_1))}{\exp(2\sqrt{2}(\int_1^x K[1]F(K[1]) dK[1] + c_1)) + 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 29

$$\left\{ y(x) = \frac{x(\sqrt{2} - 2 \tanh((\int F(x) x dx + _C1) \sqrt{2})) \sqrt{2}}{2} \right\}$$

2.992 ODE No. 992

$$y'(x) = \frac{y(x)}{x} - F(x) (-x^3 - 7xy(x)^2)$$

✓ **Mathematica** : cpu = 0.107583 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow \frac{x \tan(\sqrt{7} \int_1^x K[1]^2 F(K[1]) dK[1] + \sqrt{7}c_1)}{\sqrt{7}} \right\} \right\}$$

✓ **Maple** : cpu = 0.035 (sec), leaf count = 25

$$\left\{ y(x) = \frac{\tan\left(\left(\int x^2 F(x) dx + _C1\right) \sqrt{7}\right) x \sqrt{7}}{7} \right\}$$

2.993 ODE No. 993

$$y'(x) = \frac{y(x)}{x \log(x)} - F(x) (-y(x)^2 - 2y(x) \log(x) - \log^2(x))$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.022 (sec), leaf count = 35

$$\left\{ y(x) = -\frac{\ln(x) \left(\int -2 \ln(x) F(x) dx - _C1 - 2\right)}{\int -2 \ln(x) F(x) dx - _C1} \right\}$$

2.994 ODE No. 994

$$y'(x) = \frac{y(x)}{x \log(x)} - x^3 (-y(x)^2 - 2y(x) \log(x) - \log^2(x))$$

✓ **Mathematica** : cpu = 0.121263 (sec), leaf count = 198

$$\left\{ \left\{ y(x) \rightarrow -\frac{c_1 e^{\frac{1}{16} x^4 (4 \log(x) - 1)} \left(\frac{x^3}{4} + \frac{1}{4} x^3 (4 \log(x) - 1)\right) + \frac{1}{16} x^4 e^{\frac{1}{16} x^4 (4 \log(x) - 1)} (4 \log(x) - 1) \left(\frac{x^3}{4} + \frac{1}{4} x^3 (4 \log(x) - 1)\right)}{x^3 \left(c_1 e^{\frac{1}{16} x^4 (4 \log(x) - 1)} + \frac{1}{16} x^4 e^{\frac{1}{16} x^4 (4 \log(x) - 1)}\right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.022 (sec), leaf count = 43

$$\left\{ y(x) = -\frac{\ln(x) (4 x^4 \ln(x) - x^4 + 8 _C1 + 16)}{4 x^4 \ln(x) - x^4 + 8 _C1} \right\}$$

2.995 ODE No. 995

$$y'(x) = (y(x) - e^x)^2 + e^x$$

✓ **Mathematica** : cpu = 0.0169345 (sec), leaf count = 17

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

✓ **Maple** : cpu = 0.139 (sec), leaf count = 14

$$\{y(x) = e^x + (_C1 - x)^{-1}\}$$

2.996 ODE No. 996

$$y'(x) = \frac{(y(x) - \text{Si}(x))^2 + \sin(x)}{x}$$

✗ **Mathematica** : cpu = 61.0416 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[1][y][x] == (Sin[x] + (-SinIntegral[x] + y[x])^2)/x, y[x], x]`

✓ **Maple** : cpu = 0.074 (sec), leaf count = 15

$$\{y(x) = \text{Si}(x) + (_C1 - \ln(x))^{-1}\}$$

2.997 ODE No. 997

$$y'(x) = (y(x) + \cos(x))^2 + \sin(x)$$

✓ **Mathematica** : cpu = 0.0298868 (sec), leaf count = 18

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{c_1 - x} - \cos(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.065 (sec), leaf count = 16

$$\{y(x) = -\cos(x) + (_C1 - x)^{-1}\}$$

2.998 ODE No. 998

$$y'(x) = \frac{(-\text{Ci}(x) + y(x) - \log(x))^2 + \cos(x)}{x}$$

✓ **Mathematica** : cpu = 0.432759 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow \frac{x^2}{c_1 - \frac{x^2}{2}} + \text{Ci}(x) + \log(x) + 1 \right\} \right\}$$

✓ **Maple** : cpu = 0.396 (sec), leaf count = 27

$$\left\{ y(x) = \ln(x) + \text{Ci}(x) + \frac{-C1 x^2 + 1}{-C1 x^2 + 1} \right\}$$

2.999 ODE No. 999

$$y'(x) = \frac{(y(x) - x + \log(x + 1))^2 + x}{x + 1}$$

✓ **Mathematica** : cpu = 0.0246576 (sec), leaf count = 24

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{c_1 - \log(x + 1)} + x - \log(x + 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.061 (sec), leaf count = 39

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

2.1000 ODE No. 1000

$$y'(x) = \frac{x^3 + 2x^2y(x) - xy(x) - y(x)^2 + xy(x) \log(x)}{x^2(x + \log(x))}$$

✗ **Mathematica** : cpu = 300.048 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.16 (sec), leaf count = 19

$$\left\{ y(x) = \frac{x(C1 x - 1)}{-C1 \ln(x) + 1} \right\}$$

2.1001 ODE No. 1001

$$y''(x) = 0$$

✓ **Mathematica** : cpu = 0.00495367 (sec), leaf count = 12

$$\{\{y(x) \rightarrow c_2x + c_1\}\}$$

✓ **Maple** : cpu = 0.002 (sec), leaf count = 9

$$\{y(x) = _C1 x + _C2\}$$

2.1002 ODE No. 1002

$$y''(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.00541125 (sec), leaf count = 16

$$\{\{y(x) \rightarrow c_2 \sin(x) + c_1 \cos(x)\}\}$$

✓ **Maple** : cpu = 0.005 (sec), leaf count = 13

$$\{y(x) = _C1 \sin(x) + _C2 \cos(x)\}$$

2.1003 ODE No. 1003

$$-\sin(nx) + y''(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.110507 (sec), leaf count = 45

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin(x) + c_1 \cos(x) + \frac{\cos^2(x)(-\sin(nx)) - \sin^2(x) \sin(nx)}{n^2 - 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 26

$$\left\{ y(x) = \sin(x) _C2 + \cos(x) _C1 - \frac{\sin(nx)}{n^2 - 1} \right\}$$

2.1004 ODE No. 1004

$$-a \cos(bx) + y''(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0991621 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow \frac{-a \cos^2(x) \cos(bx) - a \sin^2(x) \cos(bx)}{b^2 - 1} + c_2 \sin(x) + c_1 \cos(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.045 (sec), leaf count = 27

$$\left\{ y(x) = \sin(x) _C2 + \cos(x) _C1 - \frac{a \cos(bx)}{b^2 - 1} \right\}$$

2.1005 ODE No. 1005

$$-\sin(ax) \sin(bx) + y''(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.518654 (sec), leaf count = 1163

$$\left\{ \left\{ y(x) \rightarrow c_1 \cos(x) + c_2 \sin(x) + \frac{-\cos(x) \cos((a-b-1)x)a^3 + \cos(x) \cos((a-b+1)x)a^3 + \cos(x) \cos((a-b)x)a^3}{2a^4 + (-4b^2 - 4)a^2 + 2b^4 - 4b^2 + 2} \right\} \right\}$$

✓ **Maple** : cpu = 0.105 (sec), leaf count = 82

$$\left\{ y(x) = \sin(x) _C2 + \cos(x) _C1 + \frac{-(a+b+1)(a+b-1) \cos(x(a-b)) + \cos((a+b)x)(a-b+1)}{2a^4 + (-4b^2 - 4)a^2 + 2b^4 - 4b^2 + 2} \right\}$$

2.1006 ODE No. 1006

$$y''(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.00509831 (sec), leaf count = 20

$$\left\{ \left\{ y(x) \rightarrow c_1 e^x + c_2 e^{-x} \right\} \right\}$$

✓ **Maple** : cpu = 0.007 (sec), leaf count = 15

$$\left\{ y(x) = _C1 e^x + _C2 e^{-x} \right\}$$

2.1007 ODE No. 1007

$$-4e^{x^2}x^2 + y''(x) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0596089 (sec), leaf count = 135

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\sqrt{2}x} + c_2 e^{-\sqrt{2}x} + \frac{e^{-\sqrt{2}x} \left(-2e^{x(x+\sqrt{2})} x + 2e^{(x-\sqrt{2})x+2\sqrt{2}x} x + \sqrt{2}e^{x(x+\sqrt{2})} + \sqrt{2}e^{(x-\sqrt{2})x+2\sqrt{2}x} \right)}{2\sqrt{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.015 (sec), leaf count = 26

$$\left\{ y(x) = e^{\sqrt{2}x} _C2 + e^{-\sqrt{2}x} _C1 + e^{x^2} \right\}$$

2.1008 ODE No. 1008

$$a^2 y(x) - \cot(ax) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0411163 (sec), leaf count = 48

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sin(ax) \left(\log \left(\cos \left(\frac{ax}{2} \right) \right) - \log \left(\sin \left(\frac{ax}{2} \right) \right) \right)}{a^2} + c_2 \sin(ax) + c_1 \cos(ax) \right\} \right\}$$

✓ **Maple** : cpu = 0.043 (sec), leaf count = 43

$$\left\{ y(x) = \sin(ax) _C2 + \cos(ax) _C1 + \frac{\sin(ax) \left(\ln(\cos(ax) - 1) - \ln(\cos(ax) + 1) \right)}{2a^2} \right\}$$

2.1009 ODE No. 1009

$$ly(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.00541381 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin(\sqrt{l}x) + c_1 \cos(\sqrt{l}x) \right\} \right\}$$

✓ **Maple** : cpu = 0.014 (sec), leaf count = 21

$$\left\{ y(x) = _C1 \sin(\sqrt{l}x) + _C2 \cos(\sqrt{l}x) \right\}$$

2.1010 ODE No. 1010

$$y(x)(ax + b) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.00714332 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow c_1 \text{Ai} \left(\frac{-b - ax}{(-a)^{2/3}} \right) + c_2 \text{Bi} \left(\frac{-b - ax}{(-a)^{2/3}} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 31

$$\left\{ y(x) = _C1 \text{Ai} \left(-(ax + b)a^{-\frac{2}{3}} \right) + _C2 \text{Bi} \left(-(ax + b)a^{-\frac{2}{3}} \right) \right\}$$

2.1011 ODE No. 1011

$$y''(x) - (x^2 + 1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.00806392 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow c_1 D_{-1}(\sqrt{2}x) + c_2 D_0(i\sqrt{2}x) \right\} \right\}$$

✓ **Maple** : cpu = 0.035 (sec), leaf count = 23

$$\left\{ y(x) = _C1 e^{\frac{x^2}{2}} + _C2 e^{\frac{x^2}{2}} \text{Erf}(x) \right\}$$

2.1012 ODE No. 1012

$$y''(x) - (a + x^2)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0087602 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow c_1 D_{\frac{1}{2}(-a-1)}(\sqrt{2}x) + c_2 D_{\frac{a-1}{2}}(i\sqrt{2}x) \right\} \right\}$$

✓ **Maple** : cpu = 0.09 (sec), leaf count = 31

$$\left\{ y(x) = _C1 M_{-\frac{a}{4}, \frac{1}{4}}(x^2) \frac{1}{\sqrt{x}} + _C2 W_{-\frac{a}{4}, \frac{1}{4}}(x^2) \frac{1}{\sqrt{x}} \right\}$$

2.1013 ODE No. 1013

$$y''(x) - (a^2x^2 + a)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0200563 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow c_1 D_{-1}(\sqrt{2}\sqrt{ax}) + c_2 D_0(i\sqrt{2}\sqrt{ax}) \right\} \right\}$$

✓ **Maple** : cpu = 0.037 (sec), leaf count = 29

$$\left\{ y(x) = _C1 e^{\frac{ax^2}{2}} + _C2 e^{\frac{ax^2}{2}} \operatorname{Erf}(\sqrt{ax}) \right\}$$

2.1014 ODE No. 1014

$$y''(x) - cx^a y(x) = 0$$

✓ **Mathematica** : cpu = 0.0369348 (sec), leaf count = 170

$$\left\{ \left\{ y(x) \rightarrow (a+2)^{-\frac{1}{a+2}} c_1 c^{2(a+2)} x^{\frac{a+1}{a+2}} \Gamma\left(1 - \frac{1}{a+2}\right) I_{-\frac{1}{a+2}}\left(\frac{2\sqrt{cx}^{\frac{a+2}{2}}}{a+2}\right) + (-1)^{\frac{1}{a+2}} (a+2)^{-\frac{1}{a+2}} c_2 c^{2(a+2)} x^{1-\frac{1}{a+2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.102 (sec), leaf count = 65

$$\left\{ y(x) = _C1 \sqrt{x} J_{(a+2)^{-1}}\left(2 \frac{\sqrt{-cx}^{a/2+1}}{a+2}\right) + _C2 \sqrt{x} Y_{(a+2)^{-1}}\left(2 \frac{\sqrt{-cx}^{a/2+1}}{a+2}\right) \right\}$$

2.1015 ODE No. 1015

$$y''(x) - y(x)(a^2x^{2n} - 1) = 0$$

✗ **Mathematica** : cpu = 0.325842 (sec), leaf count = 0 , could not solve

`DSolve[-((-1 + a^2*x^(2*n))*y[x]) + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \operatorname{DESol}\left(\left\{\frac{d^2}{dx^2} Y(x) + (-a^2x^{2n} + 1) Y(x)\right\}, \{Y(x)\}\right) \right\}$$

2.1016 ODE No. 1016

$$y(x) (ax^{2c} + bx^{c-1}) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.134655 (sec), leaf count = 312

$$\left\{ \left\{ y(x) \rightarrow 2^{\frac{c}{2(c+1)}} c_1 (x^{c+1})^{\frac{c}{2(c+1)}} x^{-c/2} e^{-\frac{\sqrt{ax}^{c+1}}{\sqrt{-c^2-2c-1}}} U \left(\frac{\frac{\sqrt{acb}}{\sqrt{-(c+1)^2}} + \frac{\sqrt{ab}}{\sqrt{-(c+1)^2}} + ac}{2(ca+a)}, \frac{c}{c+1}, \frac{2\sqrt{ax}^{c+1}}{\sqrt{-c^2-2c-1}} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.214 (sec), leaf count = 95

$$\left\{ y(x) = _C1 x^{-\frac{c}{2}} M_{\frac{-ib}{2c+2}, \frac{1}{\sqrt{a}}, (2c+2)^{-1}} \left(\frac{2ix^{c+1}}{c+1} \sqrt{a} \right) + _C2 x^{-\frac{c}{2}} W_{\frac{-ib}{2c+2}, \frac{1}{\sqrt{a}}, (2c+2)^{-1}} \left(\frac{2ix^{c+1}}{c+1} \sqrt{a} \right) \right\}$$

2.1017 ODE No. 1017

$$(e^{2x} - v^2) y(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0267337 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow c_1 \Gamma(1-v) J_{-v}(\sqrt{e^{2x}}) + c_2 \Gamma(v+1) J_v(\sqrt{e^{2x}}) \right\} \right\}$$

✓ **Maple** : cpu = 0.043 (sec), leaf count = 17

$$\{y(x) = _C1 J_v(e^x) + _C2 Y_v(e^x)\}$$

2.1018 ODE No. 1018

$$ae^{bx} y(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0234689 (sec), leaf count = 55

$$\left\{ \left\{ y(x) \rightarrow c_1 J_0 \left(\frac{2\sqrt{a}\sqrt{e^{bx}}}{b} \right) + 2c_2 Y_0 \left(\frac{2\sqrt{a}\sqrt{e^{bx}}}{b} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 39

$$\left\{ y(x) = _C1 J_0 \left(2 \frac{\sqrt{a} e^{1/2 bx}}{b} \right) + _C2 Y_0 \left(2 \frac{\sqrt{a} e^{1/2 bx}}{b} \right) \right\}$$

2.1019 ODE No. 1019

$$y''(x) - y(x) \left(4a^2 b^2 x^2 e^{2bx^2} - 1 \right) = 0$$

✗ **Mathematica** : cpu = 0.778743 (sec), leaf count = 0 , could not solve

DSolve[-((-1 + 4*a^2*b^2*E^(2*b*x^2))*x^2)*y[x] + Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^2}{dx^2} - Y(x) + \left(-4a^2 b^2 x^2 e^{2bx^2} + 1 \right) - Y(x) \right\}, \{ -Y(x) \} \right) \right\}$$

2.1020 ODE No. 1020

$$y(x) (ae^{2x} + be^x + c) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.653906 (sec), leaf count = 180

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{i(\sqrt{c} \log(e^x) - \sqrt{a} e^x)} U \left(\frac{i(b - i\sqrt{a} + 2\sqrt{a}\sqrt{c})}{2\sqrt{a}}, 2i\sqrt{c} + 1, 2i\sqrt{a} e^x \right) + c_2 e^{i(\sqrt{c} \log(e^x) - \sqrt{a} e^x)} L_{-\frac{i(2\sqrt{a}\sqrt{c})}{2\sqrt{a}}}^{2i\sqrt{c}} \right. \right.$$

✓ **Maple** : cpu = 0.202 (sec), leaf count = 61

$$\left\{ y(x) = -C1 e^{-\frac{x}{2}} M_{-\frac{i}{2}b\frac{1}{\sqrt{a}}, i\sqrt{c}}(2i\sqrt{a}e^x) + -C2 e^{-\frac{x}{2}} W_{-\frac{i}{2}b\frac{1}{\sqrt{a}}, i\sqrt{c}}(2i\sqrt{a}e^x) \right\}$$

2.1021 ODE No. 1021

$$y(x) (a \cos^2(x) + b) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0459279 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow c_1 \text{MathieuC} \left[\frac{1}{2}(a + 2b), -\frac{a}{4}, x \right] + c_2 \text{MathieuS} \left[\frac{1}{2}(a + 2b), -\frac{a}{4}, x \right] \right\} \right\}$$

✓ **Maple** : cpu = 0.217 (sec), leaf count = 39

$$\left\{ y(x) = -C1 \text{MathieuC} \left(-\frac{a}{2} - b, \frac{a}{4}, ix \right) + -C2 \text{MathieuS} \left(-\frac{a}{2} - b, \frac{a}{4}, ix \right) \right\}$$

2.1022 ODE No. 1022

$$y(x)(a \cos(2x) + b) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0273922 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow c_1 \text{MathieuC} \left[b, -\frac{a}{2}, x \right] + c_2 \text{MathieuS} \left[b, -\frac{a}{2}, x \right] \right\} \right\}$$

✓ **Maple** : cpu = 0.209 (sec), leaf count = 21

$$\left\{ y(x) = _C1 \text{MathieuC} \left(b, -\frac{a}{2}, x \right) + _C2 \text{MathieuS} \left(b, -\frac{a}{2}, x \right) \right\}$$

2.1023 ODE No. 1023

$$y(x) (a \cos^2(x) + b) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0153557 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow c_1 \text{MathieuC} \left[\frac{1}{2}(a + 2b), -\frac{a}{4}, x \right] + c_2 \text{MathieuS} \left[\frac{1}{2}(a + 2b), -\frac{a}{4}, x \right] \right\} \right\}$$

✓ **Maple** : cpu = 0.212 (sec), leaf count = 29

$$\left\{ y(x) = _C1 \text{MathieuC} \left(\frac{a}{2} + b, -\frac{a}{4}, x \right) + _C2 \text{MathieuS} \left(\frac{a}{2} + b, -\frac{a}{4}, x \right) \right\}$$

2.1024 ODE No. 1024

$$y''(x) - y(x) (2 \tan^2(x) + 1) = 0$$

✓ **Mathematica** : cpu = 0.157519 (sec), leaf count = 84

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 \sqrt[4]{1 - \cos^2(x)} \sec(x)}{\sqrt[4]{\cos^2(x) - 1}} - \frac{c_2 \sqrt[4]{1 - \cos^2(x)} \sec(x) \left(\cos(x) \sqrt{1 - \cos^2(x)} - \sin^{-1}(\cos(x)) \right)}{2 \sqrt[4]{\cos^2(x) - 1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.137 (sec), leaf count = 34

$$\left\{ y(x) = \frac{_C1}{\cos(x)} + \frac{_C2 (i \cos(x) \sin(x) + \ln(\cos(x) + i \sin(x)))}{\cos(x)} \right\}$$

2.1025 ODE No. 1025

$$y''(x) - y(x) (a + (m - 1)m \sec^2(x) + (n - 1)n \csc^2(x)) = 0$$

✓ **Mathematica** : cpu = 0.948232 (sec), leaf count = 615

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 (-1)^{\frac{1}{2}(-2m-1)+1} \cos^2(x)^{\frac{1}{4}(-2m-1)+1} (\cos^2(x) - 1)^{\frac{1}{2} \left(\frac{4am+4\sqrt{-an^2+4an-4\sqrt{-an}+4(-a)^{3/2}+8\sqrt{-aa+\sqrt{-a}+4mn}}{8a+8n^2-8n+2} \right)}}{\right. \right.$$

✓ **Maple** : cpu = 0.205 (sec), leaf count = 105

$$\left\{ y(x) = _C1 (\cos(x))^m (\sin(x))^n {}_2F_1\left(\frac{n}{2} + \frac{m}{2} + \frac{i}{2}\sqrt{a}, \frac{n}{2} + \frac{m}{2} - \frac{i}{2}\sqrt{a}; \frac{1}{2} + m; (\cos(x))^2\right) + _C2 (\cos(x)) \right.$$

2.1026 ODE No. 1026

$$y''(x) - y(x)(B + n(n + 1)\wp(x; g2, g3)) = 0$$

✗ **Mathematica** : cpu = 0.178705 (sec), leaf count = 0 , could not solve

`DSolve[-((B + n*(1 + n)*WeierstrassP[x, {g2, g3}])*y[x]) + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{\frac{d^2}{dx^2} Y(x) + (-n(n + 1) WeierstrassP(x, g2, g3) - B) Y(x)\right\}, \{Y(x)\}\right)\right\}$$

2.1027 ODE No. 1027

$$y(x) (asn(x|k)^2 + b) + y''(x) = 0$$

✗ **Mathematica** : cpu = 1.28291 (sec), leaf count = 0 , could not solve

`DSolve[(b + a*JacobiSN[x, k]^2)*y[x] + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.408 (sec), leaf count = 69

$$\left\{ y(x) = _C1 HeunG\left(k^{-2}, \frac{b}{4k^2}, -\frac{n}{2}, \frac{n}{2} + \frac{1}{2}, \frac{1}{2}, \frac{1}{2}, (JacobiSN(x, k))^2\right) + _C2 HeunG\left(k^{-2}, \frac{k^2 + b + 1}{4k^2}, \right.$$

2.1028 ODE No. 1028

$$y''(x) - y(x) \left(ap(x) + b + \frac{p^4(x)}{30} + \frac{7p''(x)}{3} \right) = 0$$

✗ **Mathematica** : cpu = 0.255767 (sec), leaf count = 0 , could not solve

DSolve[-(y[x]*(b + a*p[x] + (p^4)[x]/30 + (7*Derivative[2][p][x])/3)) + Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^2}{dx^2} Y(x) + \left(-\frac{d^4 p(x)}{dx^4} - \frac{7}{3} \frac{d^2 p(x)}{dx^2} - ap(x) - b \right) Y(x) \right\}, \{ Y(x) \} \right) \right\}$$

2.1029 ODE No. 1029

$$y''(x) - y(x) (f'(x) + f(x)^2) = 0$$

✗ **Mathematica** : cpu = 0.118503 (sec), leaf count = 0 , could not solve

DSolve[-(y[x]*(f[x]^2 + Derivative[1][f][x])) + Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.134 (sec), leaf count = 22

$$\left\{ y(x) = \left(\int e^{\int -2f(x) dx} dx + C1 \right) e^{\int f(x) dx} C2 \right\}$$

2.1030 ODE No. 1030

$$y(x)(l + P(x)) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.188721 (sec), leaf count = 0 , could not solve

DSolve[(1 + P[x])*y[x] + Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ (P(x) + l) Y(x) + \frac{d^2}{dx^2} Y(x) \right\}, \{ Y(x) \} \right) \right\}$$

2.1031 ODE No. 1031

$$y''(x) - f(x)y(x) = 0$$

✗ **Mathematica** : cpu = 0.120945 (sec), leaf count = 0 , could not solve

DSolve[-(f[x]*y[x]) + Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{-f(x)Y(x) + \frac{d^2}{dx^2}Y(x)\right\}, \{Y(x)\}\right) \right\}$$

2.1032 ODE No. 1032

$$y(x) \left(\frac{(\frac{1}{4} - v^2) g'(x)^2}{g(x)} + g'(x)^2 + \frac{g^3(x)}{2g'(x)} - \frac{3g''(x)^2}{4g'(x)^2} \right) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.472561 (sec), leaf count = 0 , could not solve

DSolve[y[x]*((g^3)[x]/(2*Derivative[1][g][x]) + Derivative[1][g][x]^2 + ((1/4 - v^2)*D

✓ **Maple** : cpu = 0.118 (sec), leaf count = 53

$$\left\{ y(x) = -C1 M_{\frac{i}{2}v^2 - \frac{i}{8}, \frac{1}{2}}(2ig(x)) \frac{1}{\sqrt{\frac{d}{dx}g(x)}} + -C2 W_{\frac{i}{2}v^2 - \frac{i}{8}, \frac{1}{2}}(2ig(x)) \frac{1}{\sqrt{\frac{d}{dx}g(x)}} \right\}$$

2.1033 ODE No. 1033

$$ae^{-2x}y(x) + y''(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0168587 (sec), leaf count = 37

$$\{ \{ y(x) \rightarrow c_1 \cos(\sqrt{ae^{-x}}) - c_2 \sin(\sqrt{ae^{-x}}) \} \}$$

✓ **Maple** : cpu = 0.009 (sec), leaf count = 27

$$\{ y(x) = -C1 \sin(e^{-x}\sqrt{a}) + -C2 \cos(e^{-x}\sqrt{a}) \}$$

2.1034 ODE No. 1034

$$y''(x) - y'(x) + e^{2x}y(x) = 0$$

✓ **Mathematica** : cpu = 0.0117853 (sec), leaf count = 20

$$\{\{y(x) \rightarrow c_2 \sin(e^x) + c_1 \cos(e^x)\}\}$$

✓ **Maple** : cpu = 0.007 (sec), leaf count = 15

$$\{y(x) = _C1 \sin(e^x) + _C2 \cos(e^x)\}$$

2.1035 ODE No. 1035

$$ay'(x) + by(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.00587939 (sec), leaf count = 58

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{2}x(-\sqrt{a^2-4b}-a)} + c_2 e^{\frac{1}{2}x(\sqrt{a^2-4b}-a)} \right\} \right\}$$

✓ **Maple** : cpu = 0.012 (sec), leaf count = 45

$$\left\{ y(x) = _C1 e^{(-\frac{a}{2} + \frac{1}{2}\sqrt{a^2-4b})x} + _C2 e^{(-\frac{a}{2} - \frac{1}{2}\sqrt{a^2-4b})x} \right\}$$

2.1036 ODE No. 1036

$$ay'(x) + by(x) - f(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.456709 (sec), leaf count = 207

$$\left\{ \left\{ y(x) \rightarrow e^{\frac{1}{2}x(\sqrt{a^2-4b}-a)} \int_1^x \frac{f(K[2]) \exp\left(\frac{1}{2}(-\sqrt{a^2-4b}-a)K[2] + aK[2]\right)}{\sqrt{a^2-4b}} dK[2] + e^{\frac{1}{2}x(-\sqrt{a^2-4b}-a)} \int_1^x \dots \right\} \right\}$$

✓ **Maple** : cpu = 0.097 (sec), leaf count = 128

$$\left\{ y(x) = e^{(-\frac{a}{2} + \frac{1}{2}\sqrt{a^2-4b})x} _C2 + e^{(-\frac{a}{2} - \frac{1}{2}\sqrt{a^2-4b})x} _C1 + 1 \left(\int f(x) e^{-\frac{x}{2}(-a + \sqrt{a^2-4b})} dx e^{x\sqrt{a^2-4b}} - \int f(x) e^{\dots} \right) \right\}$$

2.1037 ODE No. 1037

$$ay'(x) + y(x) (- (b^2x^2 + c)) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0295953 (sec), leaf count = 101

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{ax}{2} - \frac{bx^2}{2}} H_{-\frac{a^2-4b-4c}{8b}}(\sqrt{bx}) + c_2 e^{-\frac{ax}{2} - \frac{bx^2}{2}} {}_1F_1\left(-\frac{-a^2-4b-4c}{16b}; \frac{1}{2}; bx^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.099 (sec), leaf count = 73

$$\left\{ y(x) = {}_C1 M\left(\frac{a^2 + 12b + 4c}{16b}, \frac{3}{2}, bx^2\right) x e^{-\frac{x(bx+a)}{2}} + {}_C2 U\left(\frac{a^2 + 12b + 4c}{16b}, \frac{3}{2}, bx^2\right) x e^{-\frac{x(bx+a)}{2}} \right\}$$

2.1038 ODE No. 1038

$$2ay'(x) + f(x)y(x) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.323839 (sec), leaf count = 0 , could not solve

`DSolve[f[x]*y[x] + 2*a*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{ f(x) {}_Y(x) + 2a \frac{d}{dx} {}_Y(x) + \frac{d^2}{dx^2} {}_Y(x) \right\}, \{ {}_Y(x) \} \right) \right\}$$

2.1039 ODE No. 1039

$$y''(x) + xy'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0127283 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow \sqrt{\frac{\pi}{2}} c_1 e^{-\frac{x^2}{2}} \operatorname{erfi}\left(\frac{x}{\sqrt{2}}\right) + c_2 e^{-\frac{x^2}{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.006 (sec), leaf count = 33

$$\left\{ y(x) = \operatorname{Erf}\left(\frac{i}{2}\sqrt{2x}\right) {}_C1 \left(e^{\frac{x^2}{2}}\right)^{-1} + {}_C2 \left(e^{\frac{x^2}{2}}\right)^{-1} \right\}$$

2.1040 ODE No. 1040

$$y''(x) + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0301182 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow c_1 x - \frac{1}{2} c_2 e^{-\frac{x^2}{2}} \left(\sqrt{2\pi} e^{\frac{x^2}{2}} \operatorname{erf}\left(\frac{x}{\sqrt{2}}\right) + 2 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.04 (sec), leaf count = 35

$$\left\{ y(x) = _C1 x + _C2 \left(-\frac{\sqrt{\pi}\sqrt{2}x}{2} \operatorname{Erf}\left(\frac{\sqrt{2}x}{2}\right) - e^{-\frac{x^2}{2}} \right) \right\}$$

2.1041 ODE No. 1041

$$(n+1)y(x) + y''(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0102891 (sec), leaf count = 55

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{x^2}{2}} H_n\left(\frac{x}{\sqrt{2}}\right) + c_2 e^{-\frac{x^2}{2}} {}_1F_1\left(-\frac{n}{2}; \frac{1}{2}; \frac{x^2}{2}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.071 (sec), leaf count = 47

$$\left\{ y(x) = _C1 e^{-\frac{x^2}{2}} M\left(-\frac{n}{2} + \frac{1}{2}, \frac{3}{2}, \frac{x^2}{2}\right) x + _C2 e^{-\frac{x^2}{2}} U\left(-\frac{n}{2} + \frac{1}{2}, \frac{3}{2}, \frac{x^2}{2}\right) x \right\}$$

2.1042 ODE No. 1042

$$-ny(x) + y''(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.00889876 (sec), leaf count = 61

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{x^2}{2}} H_{-n-1}\left(\frac{x}{\sqrt{2}}\right) + c_2 e^{-\frac{x^2}{2}} {}_1F_1\left(\frac{n+1}{2}; \frac{1}{2}; \frac{x^2}{2}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.065 (sec), leaf count = 47

$$\left\{ y(x) = _C1 e^{-\frac{x^2}{2}} M\left(\frac{n}{2} + 1, \frac{3}{2}, \frac{x^2}{2}\right) x + _C2 e^{-\frac{x^2}{2}} U\left(\frac{n}{2} + 1, \frac{3}{2}, \frac{x^2}{2}\right) x \right\}$$

2.1043 ODE No. 1043

$$y''(x) - xy'(x) + 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0448355 (sec), leaf count = 69

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}c_2 \left(\sqrt{2\pi}x^2 \operatorname{erfi} \left(\frac{x}{\sqrt{2}} \right) - \sqrt{2\pi} \operatorname{erfi} \left(\frac{x}{\sqrt{2}} \right) - 2e^{\frac{x^2}{2}} x \right) + c_1(x^2 - 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.195 (sec), leaf count = 44

$$\left\{ y(x) = _C1 \left(-2xe^{1/2x^2} + \sqrt{2}\sqrt{\pi} \operatorname{erfi} \left(\frac{\sqrt{2}x}{2} \right) (x-1)(1+x) \right) + _C2(x^2 - 1) \right\}$$

2.1044 ODE No. 1044

$$-ay(x) + y''(x) - xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.00988495 (sec), leaf count = 39

$$\left\{ \left\{ y(x) \rightarrow c_1 H_{-a} \left(\frac{x}{\sqrt{2}} \right) + c_2 {}_1F_1 \left(\frac{a}{2}; \frac{1}{2}; \frac{x^2}{2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.069 (sec), leaf count = 35

$$\left\{ y(x) = _C1 M \left(\frac{a}{2} + \frac{1}{2}, \frac{3}{2}, \frac{x^2}{2} \right) x + _C2 U \left(\frac{a}{2} + \frac{1}{2}, \frac{3}{2}, \frac{x^2}{2} \right) x \right\}$$

2.1045 ODE No. 1045

$$y''(x) - xy'(x) + (x-1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0221487 (sec), leaf count = 39

$$\left\{ \left\{ y(x) \rightarrow \sqrt{\frac{\pi}{2}} c_2 e^{x-2} \operatorname{erfi} \left(\frac{x-2}{\sqrt{2}} \right) + c_1 e^x \right\} \right\}$$

✓ **Maple** : cpu = 0.009 (sec), leaf count = 28

$$\left\{ y(x) = \operatorname{Erf} \left(\frac{i}{2}\sqrt{2}x - i\sqrt{2} \right) e^x _C1 + _C2 e^x \right\}$$

2.1046 ODE No. 1046

$$ay(x) + y''(x) - 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.00775993 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow c_1 H_{\frac{a}{2}}(x) + c_2 {}_1F_1\left(-\frac{a}{4}; \frac{1}{2}; x^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.072 (sec), leaf count = 31

$$\left\{ y(x) = {}_C1 M\left(\frac{1}{2} - \frac{a}{4}, \frac{3}{2}, x^2\right)x + {}_C2 U\left(\frac{1}{2} - \frac{a}{4}, \frac{3}{2}, x^2\right)x \right\}$$

2.1047 ODE No. 1047

$$(4x^2 + 2)y(x) + y''(x) + 4xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0147311 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-x^2} + c_2 e^{-x^2} x \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 22

$$\left\{ y(x) = {}_C1 e^{-x^2} + {}_C2 x e^{-x^2} \right\}$$

2.1048 ODE No. 1048

$$(2n + 3x^2 - 1)y(x) + y''(x) - 4xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0115581 (sec), leaf count = 45

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{x^2}{2}} H_n(x) + c_2 e^{\frac{x^2}{2}} {}_1F_1\left(-\frac{n}{2}; \frac{1}{2}; x^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.071 (sec), leaf count = 43

$$\left\{ y(x) = {}_C1 e^{\frac{x^2}{2}} M\left(-\frac{n}{2} + \frac{1}{2}, \frac{3}{2}, x^2\right)x + {}_C2 e^{\frac{x^2}{2}} U\left(-\frac{n}{2} + \frac{1}{2}, \frac{3}{2}, x^2\right)x \right\}$$

2.1049 ODE No. 1049

$$(4x^2 - 1)y(x) + y''(x) - 4xy'(x) - e^x = 0$$

✓ **Mathematica** : cpu = 0.0596761 (sec), leaf count = 109

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{x(x-i)} - \frac{1}{2} i c_2 e^{(x-i)x+2ix} + \frac{1}{4} \sqrt{\pi} e^{x(x-i)-\frac{i}{2}} \left(e^{2ix} \operatorname{erfi} \left(\left(\frac{1}{2} + \frac{i}{2} \right) - ix \right) - i e^i \operatorname{erf} \left(-x + \left(\frac{1}{2} + \frac{i}{2} \right) \right) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.157 (sec), leaf count = 70

$$\left\{ y(x) = e^{x^2} \cos(x) _C2 + e^{x^2} \sin(x) _C1 - \frac{e^{x^2} \sqrt{\pi} \left(-(i \cos(x) + \sin(x)) e^{\frac{i}{2}} \operatorname{Erf} \left(x - \frac{1}{2} - \frac{i}{2} \right) + e^{-\frac{i}{2}} (i \cos(x) + \sin(x)) \right)}{4} \right\}$$

2.1050 ODE No. 1050

$$(4x^2 - 2)y(x) + y''(x) - 4xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0130793 (sec), leaf count = 23

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{x^2} + c_2 e^{x^2} x \right\} \right\}$$

✓ **Maple** : cpu = 0.027 (sec), leaf count = 18

$$\left\{ y(x) = e^{x^2} _C1 + e^{x^2} _C2 x \right\}$$

2.1051 ODE No. 1051

$$(4x^2 - 3)y(x) - e^{x^2} + y''(x) - 4xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0270646 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{(x-1)x} + \frac{1}{2} c_2 e^{(x-1)x+2x} - e^{(x-1)x+x} \right\} \right\}$$

✓ **Maple** : cpu = 0.038 (sec), leaf count = 27

$$\left\{ y(x) = e^{x(1+x)} _C2 + e^{x(x-1)} _C1 - e^{x^2} \right\}$$

2.1052 ODE No. 1052

$$axy'(x) + by(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.022236 (sec), leaf count = 78

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{ax^2}{2}} H_{\frac{b-a}{a}} \left(\frac{\sqrt{ax}}{\sqrt{2}} \right) + c_2 e^{-\frac{ax^2}{2}} {}_1F_1 \left(-\frac{b-a}{2a}; \frac{1}{2}; \frac{ax^2}{2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.095 (sec), leaf count = 65

$$\left\{ y(x) = {}_C1 e^{-\frac{ax^2}{2}} M \left(\frac{2a-b}{2a}, \frac{3}{2}, \frac{ax^2}{2} \right) x + {}_C2 e^{-\frac{ax^2}{2}} U \left(\frac{2a-b}{2a}, \frac{3}{2}, \frac{ax^2}{2} \right) x \right\}$$

2.1053 ODE No. 1053

$$a^2 x^2 y(x) + 2axy'(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0299284 (sec), leaf count = 57

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{ax^2}{2} - \sqrt{ax}} + \frac{c_2 e^{\sqrt{ax} - \frac{ax^2}{2}}}{2\sqrt{a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.045 (sec), leaf count = 35

$$\left\{ y(x) = {}_C1 e^{-\frac{\pi}{2}(ax-2\sqrt{a})} + {}_C2 e^{-\frac{\pi}{2}(ax+2\sqrt{a})} \right\}$$

2.1054 ODE No. 1054

$$(ax + b)y'(x) + y(x)(cx + d) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0494446 (sec), leaf count = 172

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{cx}{a} - \frac{ax^2}{2} - bx} H_{-\frac{a^3+a^2d-abc+c^2}{a^3}} \left(\frac{ab-2c}{\sqrt{2}a^{3/2}} + \frac{\sqrt{ax}}{\sqrt{2}} \right) + c_2 e^{\frac{cx}{a} - \frac{ax^2}{2} - bx} {}_1F_1 \left(-\frac{-a^3 + da^2 - bca + c^2}{2a^3}; \frac{1}{2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.053 (sec), leaf count = 105

$$\left\{ y(x) = {}_C1 e^{-\frac{cx}{a}} M \left(\frac{da^2 - abc + c^2}{2a^3}, \frac{1}{2}, -\frac{(a^2x + ab - 2c)^2}{2a^3} \right) + {}_C2 e^{-\frac{cx}{a}} U \left(\frac{da^2 - abc + c^2}{2a^3}, \frac{1}{2}, -\frac{(a^2x + ab - 2c)^2}{2a^3} \right) \right\}$$

2.1055 ODE No. 1055

$$(ax + b)y'(x) + y(x)(a_1x^2 + b_1x + c_1) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.155913 (sec), leaf count = 421

$$\left\{ \left\{ y(x) \rightarrow c_1 \exp \left(\frac{-bx\sqrt{a^2 - 4a_1} - \frac{1}{2}ax^2\sqrt{a^2 - 4a_1} - \frac{1}{2}a^2x^2 - abx + 2a_1x^2 + 2b_1x}{2\sqrt{a^2 - 4a_1}} \right) H_{-\frac{a^3 - a^2\sqrt{a^2 - 4a_1} + 4a_1}{2\sqrt{a^2 - 4a_1}}} \right. \right.$$

✓ **Maple** : cpu = 0.237 (sec), leaf count = 317

$$\left\{ y(x) = {}_1F_1 \left(\frac{1}{4} \left((a^2 - 4a_1)^{\frac{3}{2}} + a^3 - 2a^2c_1 + (2b_1b - 4a_1)a + (-2b^2 + 8c_1)a_1 - 2b_1^2 \right) (a^2 - \right.$$

2.1056 ODE No. 1056

$$x^2(-y'(x)) + y''(x) + xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0382826 (sec), leaf count = 66

$$\left\{ \left\{ y(x) \rightarrow c_1 x - \frac{c_2 \left(3e^{\frac{x^3}{3}} (-x^3)^{2/3} + 3^{2/3} x^3 \Gamma \left(\frac{2}{3}, -\frac{x^3}{3} \right) \right)}{3(-x^3)^{2/3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.104 (sec), leaf count = 48

$$\left\{ y(x) = {}_1F_1 \left(\frac{2}{3}, -\frac{x^3}{3} \right) - \frac{c_2}{c_1} \left(\frac{2}{3}, -\frac{x^3}{3} \right) \right\}$$

2.1057 ODE No. 1057

$$x^2(-y'(x)) + y''(x) - (x + 1)^2 y(x) = 0$$

✓ **Mathematica** : cpu = 0.865531 (sec), leaf count = 55

$$\left\{ \left\{ y(x) \rightarrow c_2 e^{\frac{x^3}{3} + x} \int_1^x e^{-\frac{1}{3}K[1]^3 - 2K[1]} dK[1] + c_1 e^{\frac{x^3}{3} + x} \right\} \right\}$$

✓ **Maple** : cpu = 0.254 (sec), leaf count = 50

$$\left\{ y(x) = {}_1F_1 \left(0, -3, 2\sqrt[3]{3}, \frac{3^{\frac{2}{3}}x}{3} \right) e^{-x} + {}_1F_1 \left(0, 3, 2\sqrt[3]{3}, -\frac{3^{\frac{2}{3}}x}{3} \right) e^{\frac{x(x^2+3)}{3}} \right\}$$

2.1058 ODE No. 1058

$$(x^4 - 2)xy(x) - (x + 1)x^2y'(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.85717 (sec), leaf count = 55

$$\left\{ \left\{ y(x) \rightarrow c_2 e^{\frac{x^3}{3}} \int_1^x e^{\frac{K[1]^4}{4} - \frac{K[1]^3}{3}} dK[1] + c_1 e^{\frac{x^3}{3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.13 (sec), leaf count = 35

$$\left\{ y(x) = _C1 e^{\frac{x^3}{3}} + _C2 e^{\frac{x^3}{3}} \int e^{\frac{x^4}{4} - \frac{x^3}{3}} dx \right\}$$

2.1059 ODE No. 1059

$$x^4y'(x) - x^3y(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0564023 (sec), leaf count = 72

$$\left\{ \left\{ y(x) \rightarrow c_1 x - \frac{c_2 e^{-\frac{x^5}{5}} \left(5(x^5)^{4/5} - 5^{4/5} e^{\frac{x^5}{5}} x^5 \Gamma\left(\frac{4}{5}, \frac{x^5}{5}\right) \right)}{5(x^5)^{4/5}} \right\} \right\}$$

✓ **Maple** : cpu = 0.081 (sec), leaf count = 55

$$\left\{ y(x) = _C1 x + \frac{_C2}{x^7} e^{-\frac{x^5}{10}} \left(x^{10} M_{\frac{2}{5}, \frac{9}{10}}\left(\frac{x^5}{5}\right) + 9 M_{7/5, \frac{9}{10}}(1/5 x^5) x^5 + 36 M_{7/5, \frac{9}{10}}(1/5 x^5) \right) \right\}$$

2.1060 ODE No. 1060

$$ax^{q-1}y'(x) + bx^{q-2}y(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0368935 (sec), leaf count = 83

$$\left\{ \left\{ y(x) \rightarrow c_2 q^{-1/q} a^{\frac{1}{q}} (x^q)^{\frac{1}{q}} {}_1F_1\left(\frac{b}{aq} + \frac{1}{q}; 1 + \frac{1}{q}; -\frac{ax^q}{q}\right) + c_1 {}_1F_1\left(\frac{b}{aq}; 1 - \frac{1}{q}; -\frac{ax^q}{q}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.181 (sec), leaf count = 91

$$\left\{ y(x) = _C1 e^{-\frac{ax^q}{q}} M\left(\frac{aq-b}{aq}, \frac{q+1}{q}, \frac{ax^q}{q}\right) x + _C2 e^{-\frac{ax^q}{q}} U\left(\frac{aq-b}{aq}, \frac{q+1}{q}, \frac{ax^q}{q}\right) x \right\}$$

2.1061 ODE No. 1061

$$-e^{-\frac{x^{3/2}}{3}} x + y''(x) + \sqrt{x}y'(x) + \left(\frac{x}{4} + \frac{1}{4\sqrt{x}} - 9\right) y(x) = 0$$

✓ **Mathematica** : cpu = 0.0763434 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{1}{3}(\sqrt{x}+9)x} + \frac{1}{6} c_2 e^{6x - \frac{1}{3}(\sqrt{x}+9)x} - \frac{1}{9} e^{3x - \frac{1}{3}(\sqrt{x}+9)x} x \right\} \right\}$$

✓ **Maple** : cpu = 0.08 (sec), leaf count = 38

$$\left\{ y(x) = e^{-\frac{1}{3}x^{\frac{3}{2}}} \sinh(3x) _C2 + e^{-\frac{1}{3}x^{\frac{3}{2}}} \cosh(3x) _C1 - \frac{x}{9} e^{-\frac{1}{3}x^{\frac{3}{2}}} \right\}$$

2.1062 ODE No. 1062

$$\frac{(x + \sqrt{x} - 8) y(x)}{4x^2} + y''(x) - \frac{y'(x)}{\sqrt{x}} = 0$$

✓ **Mathematica** : cpu = 0.029939 (sec), leaf count = 35

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{3} c_2 e^{\sqrt{x}} x^2 + \frac{c_1 e^{\sqrt{x}}}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 23

$$\left\{ y(x) = \frac{C1}{x} e^{\sqrt{x}} + _C2 e^{\sqrt{x}} x^2 \right\}$$

2.1063 ODE No. 1063

$$y''(x) - (2e^x + 1) y'(x) + e^{2x} y(x) - e^{3x} = 0$$

✓ **Mathematica** : cpu = 0.0429092 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{e^x} + c_2 e^{e^x + e^x} + e^x + 2 \right\} \right\}$$

✓ **Maple** : cpu = 0.217 (sec), leaf count = 66

$$\left\{ y(x) = e^{e^x + \frac{x}{2}} \sinh\left(\frac{x}{2}\right) _C2 + e^{e^x + \frac{x}{2}} \cosh\left(\frac{x}{2}\right) _C1 + \left((e^{2x} + e^x + 1) \cosh\left(\frac{x}{2}\right) - 3 \sinh(x/2) (e^x + 1) \right) \right\}$$

2.1064 ODE No. 1064

$$ay'(x) + by(x) + y''(x) + \tan(x) = 0$$

✓ **Mathematica** : cpu = 0.572473 (sec), leaf count = 1400

$$\left\{ \left\{ y(x) \rightarrow e^{\frac{1}{2}(-a-\sqrt{a^2-4b})x} c_1 + e^{\frac{1}{2}(\sqrt{a^2-4b}-a)x} c_2 + \frac{8(2 {}_2F_1(1, \frac{1}{4}i(\sqrt{a^2-4b}-a); \frac{1}{4}i(\sqrt{a^2-4b}-a) + 1; -\dots)}{\dots} \right. \right.$$

✓ **Maple** : cpu = 0.3 (sec), leaf count = 129

$$\left\{ y(x) = e^{(-\frac{a}{2} + \frac{1}{2}\sqrt{a^2-4b})x} _C2 + e^{(-\frac{a}{2} - \frac{1}{2}\sqrt{a^2-4b})x} _C1 - 1 \left(\int \tan(x) e^{-\frac{x}{2}(-a+\sqrt{a^2-4b})} dx e^{x\sqrt{a^2-4b}} - \int \tan \right. \right.$$

2.1065 ODE No. 1065

$$(n^2 - a^2) y(x) + 2n \cot(x)y'(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.166963 (sec), leaf count = 114

$$\left\{ \left\{ y(x) \rightarrow c_1 (\cos^2(x) - 1)^{\frac{1}{4}(1-2n)} P_{\frac{1}{2}(2n-1)}^{\frac{1}{2}(2n-1)}(\cos(x)) + c_2 (\cos^2(x) - 1)^{\frac{1}{4}(1-2n)} Q_{\frac{1}{2}(2n-1)}^{\frac{1}{2}(2n-1)}(\cos(x)) \right. \right.$$

✓ **Maple** : cpu = 0.243 (sec), leaf count = 67

$$\left\{ y(x) = _C1 (\sin(x))^{-n+\frac{1}{2}} LegendreP\left(-\frac{1}{2} + \sqrt{-a^2 + 2n^2}, n - \frac{1}{2}, \cos(x)\right) + _C2 (\sin(x))^{-n+\frac{1}{2}} LegendreQ\left(-\frac{1}{2} + \sqrt{-a^2 + 2n^2}, n - \frac{1}{2}, \cos(x)\right) \right.$$

2.1066 ODE No. 1066

$$y''(x) + \tan(x)y'(x) + y(x) \cos^2(x) = 0$$

✓ **Mathematica** : cpu = 0.0343013 (sec), leaf count = 18

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin(\sin(x)) + c_1 \cos(\sin(x)) \right\} \right.$$

✓ **Maple** : cpu = 0.072 (sec), leaf count = 15

$$\left\{ y(x) = _C1 \sin(\sin(x)) + _C2 \cos(\sin(x)) \right.$$

2.1067 ODE No. 1067

$$y''(x) + \tan(x)y'(x) - y(x) \cos^2(x) = 0$$

✓ **Mathematica** : cpu = 0.0339385 (sec), leaf count = 21

$$\{\{y(x) \rightarrow c_1 \cosh(\sin(x)) + ic_2 \sinh(\sin(x))\}\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 17

$$\{y(x) = _C1 e^{\sin(x)} + _C2 e^{-\sin(x)}\}$$

2.1068 ODE No. 1068

$$v(v+1)y(x) + y''(x) + \cot(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.139792 (sec), leaf count = 20

$$\{\{y(x) \rightarrow c_1 P_v(\cos(x)) + c_2 Q_v(\cos(x))\}\}$$

✓ **Maple** : cpu = 0.234 (sec), leaf count = 45

$$\left\{y(x) = _C1 {}_2F_1\left(-\frac{v}{2}, \frac{1}{2} + \frac{v}{2}; \frac{1}{2}; (\cos(x))^2\right) + _C2 \cos(x) {}_2F_1\left(1 + \frac{v}{2}, \frac{1}{2} - \frac{v}{2}; \frac{3}{2}; (\cos(x))^2\right)\right\}$$

2.1069 ODE No. 1069

$$y''(x) - \cot(x)y'(x) + y(x) \sin^2(x) = 0$$

✓ **Mathematica** : cpu = 0.0366942 (sec), leaf count = 19

$$\{\{y(x) \rightarrow c_1 \cos(\cos(x)) - c_2 \sin(\cos(x))\}\}$$

✓ **Maple** : cpu = 0.093 (sec), leaf count = 15

$$\{y(x) = _C1 \sin(\cos(x)) + _C2 \cos(\cos(x))\}$$

2.1070 ODE No. 1070

$$a \tan(x)y'(x) + by(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.312089 (sec), leaf count = 143

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_2F_1\left(-\frac{a}{4} - \frac{1}{4}\sqrt{a^2 + 4b}, \frac{1}{4}\sqrt{a^2 + 4b} - \frac{a}{4}; \frac{1}{2} - \frac{a}{2}; \cos^2(x)\right) + i^{a+1} c_2 \cos^{a+1}(x) {}_2F_1\left(\frac{a}{4} - \frac{1}{4}\sqrt{a^2 + 4b}, \frac{1}{4}\sqrt{a^2 + 4b} - \frac{a}{4}; \frac{1}{2} - \frac{a}{2}; \cos^2(x)\right) \right\} \right.$$

✓ **Maple** : cpu = 0.189 (sec), leaf count = 67

$$\left\{ y(x) = _C1 (\cos(x))^{\frac{a}{2} + \frac{1}{2}} \text{LegendreP}\left(\frac{1}{2}\sqrt{a^2 + 4b} - \frac{1}{2}, \frac{a}{2} + \frac{1}{2}, \sin(x)\right) + _C2 (\cos(x))^{\frac{a}{2} + \frac{1}{2}} \text{LegendreQ}\left(\frac{1}{2}\sqrt{a^2 + 4b} - \frac{1}{2}, \frac{a}{2} + \frac{1}{2}, \sin(x)\right) \right.$$

2.1071 ODE No. 1071

$$(b^2 - a^2)y(x) + 2a \cot(ax)y'(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.104325 (sec), leaf count = 59

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\sqrt{-b^2}x} \csc(ax) + \frac{c_2 e^{\sqrt{-b^2}x} \csc(ax)}{2\sqrt{-b^2}} \right\} \right.$$

✓ **Maple** : cpu = 0.053 (sec), leaf count = 37

$$\left\{ y(x) = _C1 \sin(bx) \frac{1}{\sqrt{(\cos(ax))^2 - 1}} + _C2 \cos(bx) \frac{1}{\sqrt{(\cos(ax))^2 - 1}} \right\}$$

2.1072 ODE No. 1072

$$y(x) (-4anp(x)^2 + a + bp(x)) + ap''(x)y'(x) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.283469 (sec), leaf count = 0 , could not solve

`DSolve[(a + b*p[x] - 4*a*n*p[x]^2)*y[x] + a*Derivative[1][y][x]*Derivative[2][p][x] +`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \text{DESol}\left(\left\{\frac{d^2}{dx^2} Y(x) + a\left(\frac{d^2}{dx^2} p(x)\right) \frac{d}{dx} Y(x) + (a + bp(x) - 4na(p(x))^2) Y(x)\right\}, \{Y(x)\}\right) \right.$$

2.1073 ODE No. 1073

$$\frac{y'(x) (-\wp(x; a, b)\wp'(x; a, b) + \wp(x; a, b)^3 - 6\wp(x; a, b)^2 + \frac{a}{2})}{\wp'(x; a, b) - \wp(x; a, b)^2} + \frac{y(x) (\wp(x; a, b)^2(-\wp'(x; a, b)) - (6\wp(x; a, b)^2 + \wp'(x; a, b)))}{\wp(x; a, b)^2 + \wp'(x; a, b)}$$

✗ **Mathematica** : cpu = 1.41538 (sec), leaf count = 0 , could not solve

DSolve[(-(WeierstrassP[x, {a, b}]*(-a/2 + 6*WeierstrassP[x, {a, b}]^2)) - WeierstrassP[x, {a, b}]^2 + WeierstrassPPrime[x, {a, b}]) + Derivative[2][y][x] == 0,

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^2}{dx^2} Y(x) + \frac{\frac{d}{dx} Y(x)}{WeierstrassPPrime(x, a, b) + (WeierstrassP(x, a, b))^2} \right\} \right) \right\} \quad (11 \text{ WeierstrassP})$$

2.1074 ODE No. 1074

$$\frac{k^2 \text{cn}(x|k) \text{sn}(x|k) y'(x)}{\text{dn}(x|k)} + n^2 y(x) \text{dn}(x|k)^2 + y''(x) = 0$$

✗ **Mathematica** : cpu = 54.9614 (sec), leaf count = 0 , could not solve

DSolve[n^2*JacobiDN[x, k]^2*y[x] + (k^2*JacobiCN[x, k]*JacobiSN[x, k]*Derivative[1][y][x]) + Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.03 (sec), leaf count = 21

$$\{y(x) = _C1 \sin(n \text{JacobiAM}(x, k)) + _C2 \cos(n \text{JacobiAM}(x, k))\}$$

2.1075 ODE No. 1075

$$f(x)y'(x) + g(x)y(x) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.181362 (sec), leaf count = 0 , could not solve

DSolve[g[x]*y[x] + f[x]*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ g(x) _Y(x) + f(x) \frac{d}{dx} _Y(x) + \frac{d^2}{dx^2} _Y(x) \right\}, \{ _Y(x) \} \right) \right\}$$

2.1076 ODE No. 1076

$$y(x)(a + f'(x)) + f(x)y'(x) - g(x) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.197736 (sec), leaf count = 0 , could not solve

DSolve[-g[x] + y[x]*(a + Derivative[1][f][x]) + f[x]*Derivative[1][y][x] + Derivative

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{\frac{d^2}{dx^2}Y(x) + f(x)\frac{d}{dx}Y(x) + \left(\frac{d}{dx}f(x) + a\right)Y(x) - g(x)\right\}, \{Y(x)\}\right)\right\}$$

2.1077 ODE No. 1077

$$y'(x)(af(x) + b) + y(x)(cf(x) + d) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.308175 (sec), leaf count = 0 , could not solve

DSolve[(d + c*f[x])*y[x] + (b + a*f[x])*Derivative[1][y][x] + Derivative[2][y][x] == 0

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{\frac{d^2}{dx^2}Y(x) + (af(x) + b)\frac{d}{dx}Y(x) + (cf(x) + d)Y(x)\right\}, \{Y(x)\}\right)\right\}$$

2.1078 ODE No. 1078

$$y(x)\left(a + \frac{f'(x)}{2} + \frac{f(x)^2}{4}\right) + f(x)y'(x) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0704051 (sec), leaf count = 73

$$\left\{ \left\{ y(x) \rightarrow c_1 \exp\left(-\frac{1}{2} \int_1^x f(K[1]) dK[1] - \sqrt{-ax}\right) + \frac{c_2 e^{\sqrt{-ax} - \frac{1}{2} \int_1^x f(K[1]) dK[1]}}{2\sqrt{-a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.03 (sec), leaf count = 39

$$\left\{ y(x) = _C1 e^{-\frac{\int f(x) dx}{2}} \sinh(\sqrt{-ax}) + _C2 e^{-\frac{\int f(x) dx}{2}} \cosh(\sqrt{-ax}) \right\}$$

2.1079 ODE No. 1079

$$by(x)f(x)^{2a} - \frac{af'(x)y'(x)}{f(x)} + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.236735 (sec), leaf count = 135

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(e^{c_2 + \int_1^x -i\sqrt{b}f(K[1])^a dK[1]} - 2c_1 \exp \left(-c_2 - \int_1^x -i\sqrt{b}f(K[1])^a dK[1] \right) \right) \right\}, \left\{ y(x) \rightarrow \frac{1}{2} \left(e^{c_2 + \int_1^x -i\sqrt{b}f(K[1])^a dK[1]} + 2c_1 \exp \left(-c_2 - \int_1^x -i\sqrt{b}f(K[1])^a dK[1] \right) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.02 (sec), leaf count = 37

$$\left\{ y(x) = _C1 e^{\int i(f(x))^a \sqrt{b} dx} + _C2 e^{-\int i(f(x))^a \sqrt{b} dx} \right\}$$

2.1080 ODE No. 1080

$$y(x) \left(a^2 + \frac{af'(x)}{f(x)} - b^2 f(x)^2 \right) - y'(x) \left(2a + \frac{f'(x)}{f(x)} \right) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.301617 (sec), leaf count = 0 , could not solve

`DSolve[y[x]*(a^2 - b^2*f[x]^2 + (a*Derivative[1][f][x])/f[x]) - (2*a + Derivative[1][f][x])/f[x] + Derivative[2][y][x] == 0, y[x]]`

✓ **Maple** : cpu = 0.33 (sec), leaf count = 74

$$\left\{ y(x) = e^{\int -1 \left(\frac{f(x)(e^{-C1 b})^{2b}}{(e^{\int f(x) dx b})^2} + b f(x) - \frac{(e^{-C1 b})^{2a}}{(e^{\int f(x) dx b})^2} + a \right) \left(\frac{(e^{-C1 b})^2}{(e^{\int f(x) dx b})^2} - 1 \right)^{-1} dx} _C2 \right\}$$

2.1081 ODE No. 1081

$$-\frac{a^2 y(x) f'(x)^2}{b^2 + f(x)^2} + \frac{f(x) f^3(x) y'(x)}{b^2 + f(x)^2} + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.796893 (sec), leaf count = 0 , could not solve

`DSolve[-((a^2*y[x]*Derivative[1][f][x]^2)/(b^2 + f[x]^2)) + (f[x]*(f^3)[x]*Derivative[1][y][x])/(b^2 + f[x]^2) + Derivative[2][y][x] == 0, y[x]]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^2}{dx^2} Y(x) + \frac{f(x) \left(\frac{d^3}{dx^3} f(x) \right) \frac{d}{dx} Y(x)}{(f(x))^2 + b^2} - \frac{\left(\frac{d}{dx} f(x) \right)^2 a^2 Y(x)}{(f(x))^2 + b^2} \right\}, \{ _Y(x) \} \right) \right\}$$

2.1082 ODE No. 1082

$$y(x) \left(\frac{(m^2 - v^2)g'(x)^2}{g(x)} + g'(x)^2 \right) - y'(x) \left(\frac{(2m-1)g'(x)}{g(x)} + \frac{g''(x)}{g'(x)} \right) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.539864 (sec), leaf count = 0 , could not solve

DSolve[y[x]*(Derivative[1][g][x]^2 + ((m^2 - v^2)*Derivative[1][g][x]^2)/g[x]) - Deriv
1 + 2*m)*Derivative[1][g][x])/g[x] + Derivative[2][g][x]/Derivative[1][g][x]) + Deriva

✓ **Maple** : cpu = 0.152 (sec), leaf count = 85

$$\left\{ y(x) = _C1 e^{-ig(x)} M\left(\frac{i}{2}m^2 - \frac{i}{2}v^2 + m + \frac{1}{2}, 1 + 2m, 2ig(x)\right) (g(x))^{2m} + _C2 e^{-ig(x)} U\left(\frac{i}{2}m^2 - \frac{i}{2}v^2 + m + \frac{1}{2}, 1 + 2m, 2ig(x)\right) (g(x))^{2m} \right\}$$

2.1083 ODE No. 1083

$$-\frac{f'(x)y'(x)}{f(x)} + y(x) \left(-\frac{f''(x)}{2f(x)} + \frac{3f'(x)^2}{4f(x)^2} + \frac{(\frac{1}{4} - v^2)g'(x)^2}{g(x)^2} + g'(x)^2 + \frac{g^3(x)}{2g'(x)} - \frac{3g''(x)^2}{4g'(x)^2} \right) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.833417 (sec), leaf count = 0 , could not solve

DSolve[-((Derivative[1][f][x]*Derivative[1][y][x])/f[x]) + y[x]*((3*Derivative[1][f][x]^2)/f[x]^2 + (1/4 - v^2)*Derivative[1][g][x]^2/g[x]^2 + g'[x]^2 + g^3[x]/(2*g'[x]) - (3*Derivative[1][g][x]^2)/(4*g'[x]^2)) + Derivative[2][y][x]) = 0

✓ **Maple** : cpu = 0.098 (sec), leaf count = 43

$$\left\{ y(x) = _C1 \sqrt{\frac{f(x)g(x)}{\frac{d}{dx}g(x)}} J_v(g(x)) + _C2 \sqrt{\frac{f(x)g(x)}{\frac{d}{dx}g(x)}} Y_v(g(x)) \right\}$$

2.1084 ODE No. 1084

$$-y'(x) \left(\frac{2f'(x)}{f(x)} - \frac{g'(x)}{g(x)} + \frac{g''(x)}{g'(x)} \right) + y(x) \left(-\frac{f''(x)}{f(x)} + \frac{f'(x) \left(\frac{2f'(x)}{f(x)} - \frac{g'(x)}{g(x)} + \frac{g''(x)}{g'(x)} \right)}{f(x)} - \frac{v^2 g'(x)^2}{g(x)^2} + g'(x)^2 \right) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.859994 (sec), leaf count = 0 , could not solve

DSolve[-(Derivative[1][y][x]*((2*Derivative[1][f][x])/f[x] - Derivative[1][g][x]/g[x]) + Derivative[2][y][x]) + y[x]*(f'[x]*(2*f'[x]/f[x] - g'[x]/g[x] + g''[x]/g'[x])/f[x] - v^2*g'[x]^2/g[x]^2 + g'[x]^2) = 0

✓ **Maple** : cpu = 0.086 (sec), leaf count = 21

$$\{y(x) = _C1 J_v(g(x))f(x) + _C2 Y_v(g(x))f(x)\}$$

2.1085 ODE No. 1085

$$-y'(x) \left(\frac{(2v-1)g'(x)}{g(x)} + \frac{g''(x)}{g'(x)} + \frac{2h'(x)}{h(x)} \right) + y(x) \left(g'(x)^2 + \frac{h'(x) \left(\frac{(2v-1)g'(x)}{g(x)} + \frac{g''(x)}{g'(x)} + \frac{2h'(x)}{h(x)} \right)}{h(x)} - \frac{h''(x)}{h(x)} \right)$$

✗ **Mathematica** : cpu = 0.895187 (sec), leaf count = 0 , could not solve

`DSolve[-(Derivative[1][y][x]*((-1 + 2*v)*Derivative[1][g][x])/g[x] + (2*Derivative[1][1 + 2*v]*Derivative[1][g][x])/g[x] + (2*Derivative[1][h][x])/h[x] + Derivative[2][g][x]`

✓ **Maple** : cpu = 0.08 (sec), leaf count = 29

$$\{y(x) = -C1 J_v(g(x))h(x) (g(x))^v + -C2 Y_v(g(x))h(x) (g(x))^v\}$$

2.1086 ODE No. 1086

$$4y''(x) + 9xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0064896 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow c_1 \text{Ai} \left(\sqrt[3]{-1} \left(\frac{3}{2} \right)^{2/3} x \right) + c_2 \text{Bi} \left(\sqrt[3]{-1} \left(\frac{3}{2} \right)^{2/3} x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.027 (sec), leaf count = 29

$$\left\{ y(x) = -C1 \text{Ai} \left(-\frac{3^{2/3} \sqrt[3]{2} x}{2} \right) + -C2 \text{Bi} \left(-\frac{3^{2/3} \sqrt[3]{2} x}{2} \right) \right\}$$

2.1087 ODE No. 1087

$$4y''(x) - (a + x^2) y(x) = 0$$

✓ **Mathematica** : cpu = 0.00986287 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow c_1 D_{\frac{1}{4}(-a-2)}(x) + c_2 D_{\frac{a-2}{4}}(ix) \right\} \right\}$$

✓ **Maple** : cpu = 0.079 (sec), leaf count = 35

$$\left\{ y(x) = -C1 M_{-\frac{a}{8}, \frac{1}{4}} \left(\frac{x^2}{2} \right) \frac{1}{\sqrt{x}} + -C2 W_{-\frac{a}{8}, \frac{1}{4}} \left(\frac{x^2}{2} \right) \frac{1}{\sqrt{x}} \right\}$$

2.1088 ODE No. 1088

$$4y''(x) + 4 \tan(x)y'(x) + y(x) (-5 \tan^2(x) + 2) = 0$$

✓ **Mathematica** : cpu = 0.104075 (sec), leaf count = 180

$$\left\{ \left\{ y(x) \rightarrow -\frac{(-1)^{7/8} 2^{5/8} c_1}{\sqrt[8]{-8 \cos^2(2x) - 16 \cos(2x) - 8}} + \frac{3(-1)^{5/8} c_2 \left(4 \sqrt{-12}^{3/4} \sinh^{-1} \left(\frac{1}{2} \sqrt{-\frac{1}{2}} \sqrt{-8 \cos^2(2x) - 16 \cos(2x) - 8} \right) \right)}{\sqrt[8]{-8 \cos^2(2x) - 16 \cos(2x) - 8}} \right\} \right\}$$

✓ **Maple** : cpu = 0.136 (sec), leaf count = 36

$$\left\{ y(x) = -C1 \frac{1}{\sqrt{\cos(x)}} + -C2 (i \cos(x) \sin(x) - \ln(i \cos(x) + \sin(x))) \frac{1}{\sqrt{\cos(x)}} \right\}$$

2.1089 ODE No. 1089

$$-y'(x)(ab + c + x) + ay''(x) + y(x)(b(c + x) + d) = 0$$

✓ **Mathematica** : cpu = 0.0462441 (sec), leaf count = 99

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{bx} H_d \left(\frac{x}{\sqrt{2}\sqrt{a}} - \frac{ab-c}{\sqrt{2}\sqrt{a}} \right) + c_2 e^{bx} {}_1F_1 \left(-\frac{d}{2}; \frac{1}{2}; \left(\frac{x}{\sqrt{2}\sqrt{a}} - \frac{ab-c}{\sqrt{2}\sqrt{a}} \right)^2 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.054 (sec), leaf count = 61

$$\left\{ y(x) = -C1 e^{bx} M \left(-\frac{d}{2}, \frac{1}{2}, \frac{(ab-c-x)^2}{2a} \right) + -C2 e^{bx} U \left(-\frac{d}{2}, \frac{1}{2}, \frac{(ab-c-x)^2}{2a} \right) \right\}$$

2.1090 ODE No. 1090

$$a(a^2 - 2be^{-ax})y'(x) + a^2y''(x) + b^2e^{-2ax}y(x) = 0$$

✓ **Mathematica** : cpu = 0.0343653 (sec), leaf count = 50

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{be^{-ax}}{a^2}} - \frac{bc_2 e^{-\frac{be^{-ax}}{a^2} - ax}}{a^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.048 (sec), leaf count = 59

$$\left\{ y(x) = _C1 e^{-\frac{a^3x+2be^{-ax}}{2a^2}} \sinh\left(\frac{ax}{2}\right) + _C2 e^{-\frac{a^3x+2be^{-ax}}{2a^2}} \cosh\left(\frac{ax}{2}\right) \right\}$$

2.1091 ODE No. 1091

$$x(y''(x) + y(x)) - \cos(x) = 0$$

✓ **Mathematica** : cpu = 0.0277753 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin(x) + c_1 \cos(x) + \frac{1}{2}(\text{Ci}(2x) \sin(x) - \text{Si}(2x) \cos(x) + \log(x) \sin(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 35

$$\left\{ y(x) = \sin(x) _C2 + \cos(x) _C1 + \frac{\sin(x) \text{Ci}(2x)}{2} + \frac{\ln(x) \sin(x)}{2} - \frac{\text{Si}(2x) \cos(x)}{2} \right\}$$

2.1092 ODE No. 1092

$$(a + x)y(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0965165 (sec), leaf count = 72

$$\left\{ \left\{ y(x) \rightarrow c_2 e^{-ix} x {}_1F_1\left(1 - \frac{1}{4}i(-2(a-2) - 4); 2; 2ix\right) + c_1 e^{-ix} x U\left(1 - \frac{1}{4}i(-2(a-2) - 4), 2, 2ix\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.054 (sec), leaf count = 29

$$\left\{ y(x) = _C1 M_{-\frac{i}{2}a, \frac{1}{2}}(2ix) + _C2 W_{-\frac{i}{2}a, \frac{1}{2}}(2ix) \right\}$$

2.1093 ODE No. 1093

$$xy''(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.00597442 (sec), leaf count = 13

$$\{ \{ y(x) \rightarrow c_1 \log(x) + c_2 \} \}$$

✓ **Maple** : cpu = 0.006 (sec), leaf count = 10

$$\{ y(x) = _C2 \ln(x) + _C1 \}$$

2.1094 ODE No. 1094

$$ay(x) + xy''(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0250448 (sec), leaf count = 41

$$\{ \{ y(x) \rightarrow c_1 J_0(2\sqrt{a}\sqrt{x}) + 2c_2 Y_0(2\sqrt{a}\sqrt{x}) \} \}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 29

$$\{ y(x) = _C1 J_0(2\sqrt{a}\sqrt{x}) + _C2 Y_0(2\sqrt{a}\sqrt{x}) \}$$

2.1095 ODE No. 1095

$$lxy(x) + xy''(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0100936 (sec), leaf count = 30

$$\{ \{ y(x) \rightarrow c_1 J_0(\sqrt{l}x) + c_2 Y_0(\sqrt{l}x) \} \}$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 23

$$\{ y(x) = _C1 J_0(\sqrt{l}x) + _C2 Y_0(\sqrt{l}x) \}$$

2.1096 ODE No. 1096

$$(a+x)y(x) + xy''(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0157813 (sec), leaf count = 61

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-ix} U\left(\frac{1}{2}i(a-i), 1, 2ix\right) + c_2 e^{-ix} L_{-\frac{1}{2}i(a-i)}(2ix) \right\} \right\}$$

✓ **Maple** : cpu = 0.067 (sec), leaf count = 43

$$\left\{ y(x) = _C1 e^{-ix} M\left(\frac{1}{2} + \frac{i}{2}a, 1, 2ix\right) + _C2 e^{-ix} U\left(\frac{1}{2} + \frac{i}{2}a, 1, 2ix\right) \right\}$$

2.1097 ODE No. 1097

$$ay(x) + xy''(x) - y'(x) = 0$$

✓ **Mathematica** : cpu = 0.027533 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow 2ac_1 x J_2(2\sqrt{a}\sqrt{x}) - 2ac_2 x Y_2(2\sqrt{a}\sqrt{x}) \right\} \right\}$$

✓ **Maple** : cpu = 0.008 (sec), leaf count = 31

$$\left\{ y(x) = _C1 x J_2(2\sqrt{a}\sqrt{x}) + _C2 x Y_2(2\sqrt{a}\sqrt{x}) \right\}$$

2.1098 ODE No. 1098

$$-ax^3y(x) + xy''(x) - y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0114186 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow c_1 \cosh\left(\frac{\sqrt{a}x^2}{2}\right) + ic_2 \sinh\left(\frac{\sqrt{a}x^2}{2}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.009 (sec), leaf count = 27

$$\left\{ y(x) = _C1 \sinh\left(\frac{x^2}{2}\sqrt{a}\right) + _C2 \cosh\left(\frac{x^2}{2}\sqrt{a}\right) \right\}$$

2.1099 ODE No. 1099

$$x^3(e^{x^3} - v^2)y(x) + xy''(x) - y'(x) = 0$$

✗ **Mathematica** : cpu = 1.0443 (sec), leaf count = 0 , could not solve

DSolve[(E^x^3 - v^2)*x^3*y[x] - Derivative[1][y][x] + x*Derivative[2][y][x] == 0, y[x]

✓ **Maple** : cpu = 0.041 (sec), leaf count = 25

$$\left\{ y(x) = {}_C1 J_v\left(e^{\frac{x^2}{2}}\right) + {}_C2 Y_v\left(e^{\frac{x^2}{2}}\right) \right\}$$

2.1100 ODE No. 1100

$$xy''(x) + 2y'(x) - xy(x) - e^x = 0$$

✓ **Mathematica** : cpu = 0.0230833 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-x}}{x} + \frac{c_2 e^x}{2x} + \frac{e^x(2x-1)}{4x} \right\} \right\}$$

✓ **Maple** : cpu = 0.038 (sec), leaf count = 23

$$\left\{ y(x) = \frac{\sinh(x) {}_C2}{x} + \frac{\cosh(x) {}_C1}{x} + \frac{e^x}{2} \right\}$$

2.1101 ODE No. 1101

$$axy(x) + xy''(x) + 2y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0284859 (sec), leaf count = 51

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-\sqrt{-ax}}}{x} + \frac{c_2 e^{\sqrt{-ax}}}{2\sqrt{-ax}} \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 31

$$\left\{ y(x) = \frac{{}_C1}{x} \sinh(\sqrt{-ax}) + \frac{{}_C2}{x} \cosh(\sqrt{-ax}) \right\}$$

2.1102 ODE No. 1102

$$ax^2y(x) + xy''(x) + 2y'(x) = 0$$

✓ **Mathematica** : cpu = 0.00754522 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 \text{Ai}\left(-\frac{ax}{(-a)^{2/3}}\right)}{x} + \frac{c_2 \text{Bi}\left(-\frac{ax}{(-a)^{2/3}}\right)}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 35

$$\left\{ y(x) = _C1 J_{\frac{1}{3}}\left(\frac{2}{3}\sqrt{ax^{\frac{3}{2}}}\right) \frac{1}{\sqrt{x}} + _C2 Y_{\frac{1}{3}}\left(\frac{2}{3}\sqrt{ax^{\frac{3}{2}}}\right) \frac{1}{\sqrt{x}} \right\}$$

2.1103 ODE No. 1103

$$ay(x) + xy''(x) - 2y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0284856 (sec), leaf count = 64

$$\left\{ \left\{ y(x) \rightarrow 6a^{3/2} c_1 x^{3/2} J_3(2\sqrt{a}\sqrt{x}) - 2ia^{3/2} c_2 x^{3/2} Y_3(2\sqrt{a}\sqrt{x}) \right\} \right\}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 35

$$\left\{ y(x) = _C1 x^{\frac{3}{2}} J_3(2\sqrt{a}\sqrt{x}) + _C2 x^{\frac{3}{2}} Y_3(2\sqrt{a}\sqrt{x}) \right\}$$

2.1104 ODE No. 1104

$$ay(x) + vy'(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0368186 (sec), leaf count = 104

$$\left\{ \left\{ y(x) \rightarrow c_2 a^{\frac{v-1}{2}-v+1} x^{\frac{v-1}{2}-v+1} \Gamma(2-v) J_{1-v}(2\sqrt{a}\sqrt{x}) + c_1 a^{\frac{1-v}{2}} x^{\frac{1-v}{2}} \Gamma(v) J_{v-1}(2\sqrt{a}\sqrt{x}) \right\} \right\}$$

✓ **Maple** : cpu = 0.013 (sec), leaf count = 47

$$\left\{ y(x) = _C1 x^{\frac{1}{2}-\frac{v}{2}} J_{v-1}(2\sqrt{a}\sqrt{x}) + _C2 x^{\frac{1}{2}-\frac{v}{2}} Y_{v-1}(2\sqrt{a}\sqrt{x}) \right\}$$

2.1105 ODE No. 1105

$$ay'(x) + bxy(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0223515 (sec), leaf count = 64

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{\frac{1-a}{2}} J_{\frac{a-1}{2}}(\sqrt{bx}) + c_2 x^{\frac{1-a}{2}} Y_{\frac{a-1}{2}}(\sqrt{bx}) \right\} \right\}$$

✓ **Maple** : cpu = 0.042 (sec), leaf count = 45

$$\left\{ y(x) = _C1 x^{\frac{1}{2}-\frac{a}{2}} J_{-\frac{1}{2}+\frac{a}{2}}(\sqrt{bx}) + _C2 x^{\frac{1}{2}-\frac{a}{2}} Y_{-\frac{1}{2}+\frac{a}{2}}(\sqrt{bx}) \right\}$$

2.1106 ODE No. 1106

$$ay'(x) + bx^{a1}y(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0531394 (sec), leaf count = 441

$$\left\{ \left\{ y(x) \rightarrow c_1 \left(\frac{1}{a1} + 1 \right)^{\frac{a}{(a1+1)a1} - \frac{1}{(a1+1)a1}} a1^{\frac{a}{(a1+1)a1} - \frac{1}{(a1+1)a1}} b^{\frac{1}{2}} \left(\frac{1}{(a1+1)a1} - \frac{a}{(a1+1)a1} \right) (x^{a1})^{\frac{1}{2} \left(\frac{1}{a1} + 1 \right)} \left(\frac{1}{(a1+1)a1} - \frac{1}{(a1+1)a1} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.094 (sec), leaf count = 77

$$\left\{ y(x) = _C1 x^{\frac{1}{2}-\frac{a}{2}} J_{\frac{a-1}{a1+1}} \left(2 \frac{\sqrt{bx}^{a1/2+1/2}}{a1+1} \right) + _C2 x^{\frac{1}{2}-\frac{a}{2}} Y_{\frac{a-1}{a1+1}} \left(2 \frac{\sqrt{bx}^{a1/2+1/2}}{a1+1} \right) \right\}$$

2.1107 ODE No. 1107

$$ay(x) + (b+x)y'(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.031138 (sec), leaf count = 40

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-x} U(b-a, b, x) + c_2 e^{-x} L_{a-b}^{b-1}(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.079 (sec), leaf count = 33

$$\left\{ y(x) = _C1 e^{-x} M(-a+b, b, x) + _C2 e^{-x} U(-a+b, b, x) \right\}$$

2.1108 ODE No. 1108

$$(a + b + x)y'(x) + ay(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0364766 (sec), leaf count = 37

$$\{ \{ y(x) \rightarrow c_1 e^{-x} U(b, a + b, x) + c_2 e^{-x} L_{-b}^{a+b-1}(x) \} \}$$

✓ **Maple** : cpu = 0.079 (sec), leaf count = 29

$$\{ y(x) = _C1 e^{-x} M(b, a + b, x) + _C2 e^{-x} U(b, a + b, x) \}$$

2.1109 ODE No. 1109

$$xy''(x) - xy'(x) - y(x) - e^x x(x + 1) = 0$$

✓ **Mathematica** : cpu = 0.0534357 (sec), leaf count = 45

$$\{ \{ y(x) \rightarrow c_2 (-e^x x \text{Ei}(-x) - 1) + c_1 e^x x + e^x (x^2 + x - x \log(-x) - 1) \} \}$$

✓ **Maple** : cpu = 0.03 (sec), leaf count = 40

$$\{ y(x) = (-x \text{Ei}(1, x) + e^{-x}) e^x _C1 + e^x _C2 x - (x \ln(x) - x^2 + 1) e^x \}$$

2.1110 ODE No. 1110

$$-ay(x) + xy''(x) - xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0419457 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow c_2 G_{1,2}^{2,0} \left(-x \left| \begin{matrix} 1-a \\ 0, 1 \end{matrix} \right. \right) + c_1 x {}_1F_1(a+1; 2; x) \right\} \right\}$$

✓ **Maple** : cpu = 0.048 (sec), leaf count = 23

$$\{ y(x) = _C1 x M(a + 1, 2, x) + _C2 x U(a + 1, 2, x) \}$$

2.1111 ODE No. 1111

$$xy''(x) - (x + 1)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0197725 (sec), leaf count = 20

$$\{\{y(x) \rightarrow c_1 e^x + c_2(-x - 1)\}\}$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 14

$$\{y(x) = _C1 (1 + x) + _C2 e^x\}$$

2.1112 ODE No. 1112

$$xy''(x) - (x + 1)y'(x) - 2(x - 1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0260685 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{2x} - \frac{1}{9} c_2 e^{-x} (3x + 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.035 (sec), leaf count = 22

$$\{y(x) = _C1 e^{2x} + _C2 e^{-x} (3x + 1)\}$$

2.1113 ODE No. 1113

$$-ay(x) + (b - x)y'(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0230382 (sec), leaf count = 24

$$\{\{y(x) \rightarrow c_1 U(a, b, x) + c_2 L_{-a}^{b-1}(x)\}\}$$

✓ **Maple** : cpu = 0.063 (sec), leaf count = 17

$$\{y(x) = _C1 M(a, b, x) + _C2 U(a, b, x)\}$$

2.1114 ODE No. 1114

$$xy''(x) - 2(x-1)y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0419211 (sec), leaf count = 39

$$\left\{ \left\{ y(x) \rightarrow c_2 G_{1,2}^{2,0} \left(-2x \left| \begin{array}{c} \frac{1}{2} \\ -1, 0 \end{array} \right. \right) + c_1 e^x (I_0(x) - I_1(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 35

$$\{y(x) = _C1 e^x (I_0(x) - I_1(x)) + _C2 e^x (-K_0(-x) + K_1(-x))\}$$

2.1115 ODE No. 1115

$$xy''(x) - (3x-2)y'(x) - (2x-3)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0631802 (sec), leaf count = 76

$$\left\{ \left\{ y(x) \rightarrow c_2 e^{-\frac{1}{2}(\sqrt{17}-3)x} {}_1F_1 \left(1 - \frac{6}{\sqrt{17}}; 2; \sqrt{17}x \right) + c_1 e^{-\frac{1}{2}(\sqrt{17}-3)x} U \left(1 - \frac{6}{\sqrt{17}}, 2, \sqrt{17}x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.099 (sec), leaf count = 55

$$\left\{ y(x) = _C1 M \left(1 - \frac{6\sqrt{17}}{17}, 2, \sqrt{17}x \right) e^{-\frac{x(-3+\sqrt{17})}{2}} + _C2 U \left(1 - \frac{6\sqrt{17}}{17}, 2, \sqrt{17}x \right) e^{-\frac{x(-3+\sqrt{17})}{2}} \right\}$$

2.1116 ODE No. 1116

$$y'(x)(ax+b+n) + any(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0526707 (sec), leaf count = 43

$$\{ \{ y(x) \rightarrow c_1 e^{-ax} U(b, b+n, ax) + c_2 e^{-ax} L_{-b}^{b+n-1}(ax) \} \}$$

✓ **Maple** : cpu = 0.087 (sec), leaf count = 35

$$\{y(x) = _C1 e^{-ax} M(b, b+n, ax) + _C2 e^{-ax} U(b, b+n, ax)\}$$

2.1117 ODE No. 1117

$$-(x+1)(a+b)y'(x) + abxy(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.094961 (sec), leaf count = 107

$$\left\{ \left\{ y(x) \rightarrow c_1 U\left(-\frac{-a^2 - ba - a + b}{a - b}, a + b + 2, (a - b)x\right) e^{(a+b+1)\log(x)+bx} + c_2 L_{\frac{-a^2 - ab - a + b}{a - b}}^{a+b+1}(x(a - b)) e^{(a+b+1)\log(x)+bx} \right\} \right\}$$

✓ **Maple** : cpu = 0.125 (sec), leaf count = 91

$$\left\{ y(x) = _C1 e^{bx} M\left(\frac{a^2 + ab + a - b}{a - b}, b + 2 + a, x(a - b)\right) x^{a+b+1} + _C2 e^{bx} U\left(\frac{a^2 + ab + a - b}{a - b}, b + 2 + a, x(a - b)\right) x^{a+b+1} \right\}$$

2.1118 ODE No. 1118

$$y'(x)(x(a+b) + m + n) + y(x)(abx + an + bm) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0946846 (sec), leaf count = 51

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-ax} U(m, m + n, (a - b)x) + c_2 e^{-ax} L_{-m}^{m+n-1}(x(a - b)) \right\} \right\}$$

✓ **Maple** : cpu = 0.102 (sec), leaf count = 43

$$\left\{ y(x) = _C1 e^{-ax} M(m, n + m, x(a - b)) + _C2 e^{-ax} U(m, n + m, x(a - b)) \right\}$$

2.1119 ODE No. 1119

$$y(x)(a^2x + 2ab) - 2(ax + b)y'(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.173829 (sec), leaf count = 77

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{ax} x^{b - \frac{1}{2}\sqrt{(2b+1)^2 + \frac{1}{2}}} + \frac{c_2 e^{ax} x^{b + \frac{1}{2}\sqrt{(2b+1)^2 + \frac{1}{2}}}}{\sqrt{(2b+1)^2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.043 (sec), leaf count = 24

$$\left\{ y(x) = _C1 e^{ax} + _C2 x^{2b+1} e^{ax} \right\}$$

2.1120 ODE No. 1120

$$(ax + b)y'(x) + y(x)(cx + d) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0693585 (sec), leaf count = 166

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{2}x(-\sqrt{a^2-4c}-a)} U\left(-\frac{-ab - \sqrt{a^2-4c}b + 2d}{2\sqrt{a^2-4c}}, b, \sqrt{a^2-4c}x\right) + c_2 e^{\frac{1}{2}x(-\sqrt{a^2-4c}-a)} L^{\frac{b-1}{-\frac{b\sqrt{a^2-4c}-ab}{2\sqrt{a^2-4c}}}} \right. \right.$$

✓ **Maple** : cpu = 0.225 (sec), leaf count = 123

$$\left\{ y(x) = _C1 e^{-\frac{x}{2}(a+\sqrt{a^2-4c})} M\left(\frac{1}{2}(b\sqrt{a^2-4c} + ab - 2d) \frac{1}{\sqrt{a^2-4c}}, b, \sqrt{a^2-4c}x\right) + _C2 e^{-\frac{x}{2}(a+\sqrt{a^2-4c})} \right.$$

2.1121 ODE No. 1121

$$-(x^2 - x)y'(x) + xy''(x) + (x - 1)y(x) = 0$$

✓ **Mathematica** : cpu = 10.3229 (sec), leaf count = 40

$$\left\{ \left\{ y(x) \rightarrow c_2 x \int_1^x \frac{e^{\frac{K[1]^2}{2} - K[1]}}{K[1]^2} dK[1] + c_1 x \right\} \right\}$$

✓ **Maple** : cpu = 0.021 (sec), leaf count = 26

$$\left\{ y(x) = \left(\int \frac{1}{x^2} e^{\frac{x^2}{2} - x} dx _C1 + _C2 \right) x \right\}$$

2.1122 ODE No. 1122

$$-(x^2 - x - 2)y'(x) + xy''(x) - x(x + 3)y(x) = 0$$

✓ **Mathematica** : cpu = 10.6986 (sec), leaf count = 56

$$\left\{ \left\{ y(x) \rightarrow c_2 e^{\frac{x^2}{2}} \int_1^x \frac{e^{-\frac{1}{2}K[1]^2 - K[1]}}{K[1]^2} dK[1] + c_1 e^{\frac{x^2}{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.159 (sec), leaf count = 34

$$\left\{ y(x) = _C1 e^{\frac{x^2}{2}} + _C2 e^{\frac{x^2}{2}} \int \frac{1}{x^2} e^{-\frac{x(x+2)}{2}} dx \right\}$$

2.1123 ODE No. 1123

$$-(2ax^2 + 1)y'(x) + bx^3y(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0139251 (sec), leaf count = 91

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{2}\sqrt{b}x^2 \left(\frac{a}{\sqrt{b}} - \frac{\sqrt{a^2-b}}{\sqrt{b}} \right)} + c_2 e^{\frac{1}{2}\sqrt{b}x^2 \left(\frac{\sqrt{a^2-b}}{\sqrt{b}} + \frac{a}{\sqrt{b}} \right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.055 (sec), leaf count = 45

$$\left\{ y(x) = _C1 e^{\frac{x^2}{2}(\sqrt{a^2-b}+a)} + _C2 e^{-\frac{x^2}{2}(\sqrt{a^2-b}-a)} \right\}$$

2.1124 ODE No. 1124

$$-2(x^2 - a)y'(x) + 2nxy(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0643363 (sec), leaf count = 65

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_1F_1\left(-\frac{n}{2}; a + \frac{1}{2}; x^2\right) + i^{1-2a} c_2 x^{1-2a} {}_1F_1\left(-a - \frac{n}{2} + \frac{1}{2}; \frac{3}{2} - a; x^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.086 (sec), leaf count = 29

$$\left\{ y(x) = _C1 M\left(-\frac{n}{2}, \frac{1}{2} + a, x^2\right) + _C2 U\left(-\frac{n}{2}, \frac{1}{2} + a, x^2\right) \right\}$$

2.1125 ODE No. 1125

$$-4x^5 - 4x^3y(x) + (4x^2 - 1)y'(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.173733 (sec), leaf count = 48

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-(1-\sqrt{2})x^2} + c_2 e^{-(1+\sqrt{2})x^2} - x^2 - 2 \right\} \right\}$$

✓ **Maple** : cpu = 0.051 (sec), leaf count = 36

$$\left\{ y(x) = e^{x^2(\sqrt{2}-1)} _C2 + e^{-x^2(1+\sqrt{2})} _C1 - x^2 - 2 \right\}$$

2.1126 ODE No. 1126

$$(a^2x^3 + a)y(x) + (2ax^3 - 1)y'(x) + xy''(x) = 0$$

✗ **Mathematica** : cpu = 1.15313 (sec), leaf count = 0 , DifferentialRoot result

{ {y(x) → DifferentialRoot({y, x}, {(a^2x^3 + a)y(x) + (2x^3a - 1)y'(x) + xy''(x) = 0, y(1) = c_1, y'(1) = c_2})}

✓ **Maple** : cpu = 0.043 (sec), leaf count = 26

$$\left\{ y(x) = _C1 e^{-\frac{ax^3}{3}} + _C2 e^{-\frac{ax^3}{3}} x^2 \right\}$$

2.1127 ODE No. 1127

$$y(x) (a^2x \log^2(x) + a \log(x) + a) + (2ax \log(x) + 1)y'(x) + xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0411963 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{ax} x^{-ax} + c_2 e^{ax} x^{-ax} \log(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.028 (sec), leaf count = 31

$$\left\{ y(x) = _C1 x^{-ax} e^{ax} + _C2 x^{-ax} e^{ax} \ln(x) \right\}$$

2.1128 ODE No. 1128

$$(xf(x) + 2)y'(x) + f(x)y(x) + xy''(x) = 0$$

✗ **Mathematica** : cpu = 0.245901 (sec), leaf count = 0 , could not solve

DSolve[f[x]*y[x] + (2 + x*f[x])*Derivative[1][y][x] + x*Derivative[2][y][x] == 0, y[x]

✓ **Maple** : cpu = 0.227 (sec), leaf count = 35

$$\left\{ y(x) = \frac{C1}{x} + \frac{C2}{x} \int e^{\int \frac{-xf(x)-2}{x} dx} x^2 dx \right\}$$

2.1129 ODE No. 1129

$$(x - 3)y''(x) - (4x - 9)y'(x) + (3x - 6)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0410933 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{8}c_2 e^{3x-9}(4x^3 - 42x^2 + 150x - 183) + c_1 e^{x-3} \right\} \right\}$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 30

$$\{y(x) = _C1 e^x + _C2 e^{3x}(4x^3 - 42x^2 + 150x - 183)\}$$

2.1130 ODE No. 1130

$$ay(x) + 2xy''(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0128458 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin\left(\sqrt{2}\sqrt{a}\sqrt{x}\right) + c_1 \cos\left(\sqrt{2}\sqrt{a}\sqrt{x}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.011 (sec), leaf count = 31

$$\{y(x) = _C1 \sin\left(\sqrt{x}\sqrt{2}\sqrt{a}\right) + _C2 \cos\left(\sqrt{x}\sqrt{2}\sqrt{a}\right)\}$$

2.1131 ODE No. 1131

$$ay(x) + 2xy''(x) - (x - 1)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0121751 (sec), leaf count = 58

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{x} U\left(\frac{1}{2}(1 - 2a), \frac{3}{2}, \frac{x}{2}\right) + c_2 \sqrt{x} L_{\frac{1}{2}(2a-1)}\left(\frac{x}{2}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.076 (sec), leaf count = 35

$$\left\{ y(x) = _C1 \sqrt{x} M\left(-a + \frac{1}{2}, \frac{3}{2}, \frac{x}{2}\right) + _C2 \sqrt{x} U\left(-a + \frac{1}{2}, \frac{3}{2}, \frac{x}{2}\right) \right\}$$

2.1132 ODE No. 1132

$$ay(x) + 2xy''(x) - (2x - 1)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0123191 (sec), leaf count = 48

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{x} U \left(\frac{1-a}{2}, \frac{3}{2}, x \right) + c_2 \sqrt{x} L_{\frac{a-1}{2}}^{\frac{1}{2}}(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.076 (sec), leaf count = 31

$$\left\{ y(x) = -C1 \sqrt{x} M \left(\frac{1}{2} - \frac{a}{2}, \frac{3}{2}, x \right) + -C2 \sqrt{x} U \left(\frac{1}{2} - \frac{a}{2}, \frac{3}{2}, x \right) \right\}$$

2.1133 ODE No. 1133

$$(2x - 1)y''(x) - (3x - 4)y'(x) + (x - 3)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0905852 (sec), leaf count = 92

$$\left\{ \left\{ y(x) \rightarrow 2^{5/8} c_1 e^{x-1/2} + \frac{c_2 e^{\frac{x}{2}-1/2} (\sqrt{2} e^{x/2} \sqrt[4]{2x-1} \Gamma(\frac{3}{4}, \frac{1}{4}(2x-1)) - 2\sqrt[4]{e})}{2^{5/8} \sqrt[4]{2x-1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.113 (sec), leaf count = 47

$$\left\{ y(x) = -C1 e^{\frac{x}{2}} M \left(1, \frac{3}{4}, \frac{x}{2} - \frac{1}{4} \right) \frac{1}{\sqrt[4]{2x-1}} + -C2 e^{\frac{x}{2}} U \left(1, \frac{3}{4}, \frac{x}{2} - \frac{1}{4} \right) \frac{1}{\sqrt[4]{2x-1}} \right\}$$

2.1134 ODE No. 1134

$$4xy''(x) - (a + x)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0931995 (sec), leaf count = 78

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4} c_2 e^{-x/2} x {}_1F_1 \left(\frac{1}{128} (-32(-a-4i) - 128i) + 1; 2; x \right) + \frac{1}{4} c_1 e^{-x/2} x U \left(\frac{1}{128} (-32(-a-4i) - 128i) + 1; 2; x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 21

$$\left\{ y(x) = -C1 M_{-\frac{a}{4}, \frac{1}{2}}(x) + -C2 W_{-\frac{a}{4}, \frac{1}{2}}(x) \right\}$$

2.1135 ODE No. 1135

$$4xy''(x) + 2y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0107809 (sec), leaf count = 27

$$\{ \{ y(x) \rightarrow c_1 \cosh(\sqrt{x}) + ic_2 \sinh(\sqrt{x}) \} \}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 17

$$\{ y(x) = _C1 \sinh(\sqrt{x}) + _C2 \cosh(\sqrt{x}) \}$$

2.1136 ODE No. 1136

$$4xy''(x) + 4y'(x) - (x + 2)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0221759 (sec), leaf count = 30

$$\{ \{ y(x) \rightarrow c_2 e^{x/2} \text{Ei}(-x) + c_1 e^{x/2} \} \}$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 20

$$\{ y(x) = _C1 e^{\frac{x}{2}} + _C2 e^{\frac{x}{2}} \text{Ei}(1, x) \}$$

2.1137 ODE No. 1137

$$ly(x) + 4xy''(x) - (x + 2)y(x) + 4y(x) = 0$$

✓ **Mathematica** : cpu = 0.0945818 (sec), leaf count = 74

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4} c_2 e^{-x/2} x {}_1F_1 \left(\frac{1}{128} (-32(l + (2 - 4i)) - 128i) + 1; 2; x \right) + \frac{1}{4} c_1 e^{-x/2} x U \left(\frac{1}{128} (-32(l + (2 - 4i)) - 128i) + 1; 2; x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.051 (sec), leaf count = 25

$$\{ y(x) = _C1 M_{\frac{l}{4} + \frac{1}{2}, \frac{1}{2}}(x) + _C2 W_{\frac{l}{4} + \frac{1}{2}, \frac{1}{2}}(x) \}$$

2.1138 ODE No. 1138

$$y(x)(-(-2m - 4n + x)) + 4my'(x) + 4xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0315565 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-x/2} U(-n, m, x) + c_2 e^{-x/2} L_n^{m-1}(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.072 (sec), leaf count = 29

$$\left\{ y(x) = _C1 e^{-\frac{x}{2}} M(-n, m, x) + _C2 e^{-\frac{x}{2}} U(-n, m, x) \right\}$$

2.1139 ODE No. 1139

$$-(a + x)y(x) + 16xy''(x) + 8y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0150418 (sec), leaf count = 74

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{4}(2\log(x)-x)} U\left(\frac{a+6}{8}, \frac{3}{2}, \frac{x}{2}\right) + c_2 e^{\frac{1}{4}(2\log(x)-x)} L_{\frac{1}{8}(-a-6)}\left(\frac{x}{2}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.075 (sec), leaf count = 43

$$\left\{ y(x) = _C1 \sqrt{x} e^{-\frac{x}{4}} M\left(\frac{a}{8} + \frac{3}{4}, \frac{3}{2}, \frac{x}{2}\right) + _C2 \sqrt{x} e^{-\frac{x}{4}} U\left(\frac{a}{8} + \frac{3}{4}, \frac{3}{2}, \frac{x}{2}\right) \right\}$$

2.1140 ODE No. 1140

$$axy''(x) + by'(x) + cy(x) = 0$$

✓ **Mathematica** : cpu = 0.0490494 (sec), leaf count = 190

$$\left\{ \left\{ y(x) \rightarrow c_1 a^{\frac{1}{2}(\frac{b}{a}-1)} c^{\frac{1}{2}(1-\frac{b}{a})} x^{\frac{1}{2}(1-\frac{b}{a})} \Gamma\left(\frac{b}{a}\right) J_{\frac{b}{a}-1}\left(\frac{2\sqrt{c}\sqrt{x}}{\sqrt{a}}\right) + c_2 a^{\frac{1}{2}(1-\frac{b}{a})-\frac{a-b}{a}} c^{\frac{a-b}{a}+\frac{1}{2}(\frac{b}{a}-1)} x^{\frac{a-b}{a}+\frac{1}{2}(\frac{b}{a}-1)} \Gamma\left(\frac{b}{a}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.021 (sec), leaf count = 77

$$\left\{ y(x) = _C1 x^{\frac{a-b}{2a}} J_{\frac{-a+b}{a}}\left(2\sqrt{\frac{c}{a}}\sqrt{x}\right) + _C2 x^{\frac{a-b}{2a}} Y_{\frac{-a+b}{a}}\left(2\sqrt{\frac{c}{a}}\sqrt{x}\right) \right\}$$

2.1141 ODE No. 1141

$$(3a + bx)y'(x) + axy''(x) + 3by(x) = 0$$

✓ **Mathematica** : cpu = 0.108772 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 e^{-\frac{bx}{a}} \left(b^2 x^2 \operatorname{Ei}\left(\frac{bx}{a}\right) - a e^{\frac{bx}{a}} (a + bx) \right)}{2a^2 x^2} + c_1 e^{-\frac{bx}{a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.055 (sec), leaf count = 49

$$\left\{ y(x) = _C1 e^{-\frac{bx}{a}} + _C2 \left(\frac{a(bx + a)}{x^2} + e^{-\frac{bx}{a}} \operatorname{Ei}\left(1, -\frac{bx}{a}\right) b^2 \right) \right\}$$

2.1142 ODE No. 1142

$$cy(x)\sqrt[5]{ax + b} + 5(ax + b)y''(x) + 8ay'(x) = 0$$

✓ **Mathematica** : cpu = 0.0491403 (sec), leaf count = 108

$$\left\{ \left\{ y(x) \rightarrow \frac{3ac_2 \sin\left(\frac{\sqrt{5}\sqrt{c}(ax+b)^{3/5}}{3a}\right)}{\sqrt{5}\sqrt{c}(ax+b)^{3/5}} + \frac{6ac_1 \cos\left(\frac{\sqrt{5}\sqrt{c}(ax+b)^{3/5}}{3a}\right)}{\sqrt{5}\sqrt{c}(ax+b)^{3/5}} \right\} \right\}$$

✓ **Maple** : cpu = 0.096 (sec), leaf count = 59

$$\left\{ y(x) = _C1 \sinh\left(\frac{1}{3a}(ax + b)^{\frac{3}{5}} \sqrt{-5c}\right) (ax + b)^{-\frac{3}{5}} + _C2 \cosh\left(\frac{1}{3a}(ax + b)^{\frac{3}{5}} \sqrt{-5c}\right) (ax + b)^{-\frac{3}{5}} \right\}$$

2.1143 ODE No. 1143

$$(a + bx)y'(x) + 2axy''(x) + cy(x) = 0$$

✓ **Mathematica** : cpu = 0.0477128 (sec), leaf count = 93

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{a \log(x) - bx}{2a}} U\left(-\frac{c-b}{b}, \frac{3}{2}, \frac{bx}{2a}\right) + c_2 e^{\frac{a \log(x) - bx}{2a}} L_{\frac{c-b}{b}}^{\frac{1}{2}}\left(\frac{bx}{2a}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.114 (sec), leaf count = 67

$$\left\{ y(x) = _C1 e^{-\frac{bx}{2a}} M\left(\frac{b-c}{b}, \frac{3}{2}, \frac{bx}{2a}\right) \sqrt{x} + _C2 e^{-\frac{bx}{2a}} U\left(\frac{b-c}{b}, \frac{3}{2}, \frac{bx}{2a}\right) \sqrt{x} \right\}$$

2.1144 ODE No. 1144

$$(3a + bx)y'(x) + 2axy''(x) + cy(x) = 0$$

✓ **Mathematica** : cpu = 0.0412271 (sec), leaf count = 88

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{bx}{2a}} U\left(-\frac{2c-3b}{2b}, \frac{3}{2}, \frac{bx}{2a}\right) + c_2 e^{-\frac{bx}{2a}} L_{\frac{2c-3b}{2b}}^{\frac{1}{2}}\left(\frac{bx}{2a}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.086 (sec), leaf count = 67

$$\left\{ y(x) = -C1 e^{-\frac{bx}{2a}} M\left(\frac{3b-2c}{2b}, \frac{3}{2}, \frac{bx}{2a}\right) + -C2 e^{-\frac{bx}{2a}} U\left(\frac{3b-2c}{2b}, \frac{3}{2}, \frac{bx}{2a}\right) \right\}$$

2.1145 ODE No. 1145

$$y(x)(a_0x + b_0) + (a_1x + b_1)y'(x) + (a_2x + b_2)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.37844 (sec), leaf count = 398

$$\left\{ \left\{ y(x) \rightarrow c_1 U\left(-\frac{b_2 a_1^2 - a_2 b_1 a_1 - \sqrt{a_1^2 - 4a_0 a_2} b_2 a_1 + 2a_2^2 b_0 + a_2 \sqrt{a_1^2 - 4a_0 a_2} b_1 - 2a_0 a_2 b_2 - 2a_1 b_2}{2a_2^2 \sqrt{a_1^2 - 4a_0 a_2}}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.201 (sec), leaf count = 287

$$\left\{ y(x) = -C1 e^{-\frac{x}{2a_2} (\sqrt{-4a_0 a_2 + a_1^2} + a_1)} M\left(\frac{1}{2a_2^2} \left((a_1 b_2 + 2a_2^2 - a_2 b_1) \sqrt{-4a_0 a_2 + a_1^2} - 2a_2^2 b_0 + \dots \right) \right)$$

2.1146 ODE No. 1146

$$x^2 y''(x) - 6y(x) = 0$$

✓ **Mathematica** : cpu = 0.024832 (sec), leaf count = 18

$$\left\{ \left\{ y(x) \rightarrow c_1 x^3 + \frac{c_2}{x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.008 (sec), leaf count = 15

$$\left\{ y(x) = -C1 x^3 + \frac{C2}{x^2} \right\}$$

2.1147 ODE No. 1147

$$x^2 y''(x) - 12y(x) = 0$$

✓ **Mathematica** : cpu = 0.0186925 (sec), leaf count = 18

$$\left\{ \left\{ y(x) \rightarrow c_1 x^4 + \frac{c_2}{x^3} \right\} \right\}$$

✓ **Maple** : cpu = 0.007 (sec), leaf count = 15

$$\left\{ y(x) = \frac{C1}{x^3} + C2 x^4 \right\}$$

2.1148 ODE No. 1148

$$ay(x) + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0117121 (sec), leaf count = 77

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{\frac{1}{2} \left(\frac{1}{\sqrt{a}} - \frac{\sqrt{1-4a}}{\sqrt{a}} \right)} \sqrt{a} + c_2 x^{\frac{1}{2} \left(\frac{\sqrt{1-4a}}{\sqrt{a}} + \frac{1}{\sqrt{a}} \right)} \sqrt{a} \right\} \right\}$$

✓ **Maple** : cpu = 0.011 (sec), leaf count = 35

$$\left\{ y(x) = C1 x^{\frac{1}{2} + \frac{1}{2} \sqrt{1-4a}} + C2 x^{\frac{1}{2} - \frac{1}{2} \sqrt{1-4a}} \right\}$$

2.1149 ODE No. 1149

$$y(x)(ax + b) + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0661289 (sec), leaf count = 212

$$\left\{ \left\{ y(x) \rightarrow c_2 a^{\frac{1}{2}(\sqrt{1-4b}+1) - \frac{1}{2}\sqrt{1-4b}} x^{\frac{1}{2}(\sqrt{1-4b}+1) - \frac{1}{2}\sqrt{1-4b}} \Gamma(\sqrt{1-4b} + 1) J_{\sqrt{1-4b}}(2\sqrt{a}\sqrt{x}) + c_1 a^{\frac{1}{2}(1-\sqrt{1-4b}) + \frac{1}{2}\sqrt{1-4b}} \right\} \right\}$$

✓ **Maple** : cpu = 0.015 (sec), leaf count = 47

$$\left\{ y(x) = C1 \sqrt{x} J_{\sqrt{-4b+1}}(2\sqrt{a}\sqrt{x}) + C2 \sqrt{x} Y_{\sqrt{-4b+1}}(2\sqrt{a}\sqrt{x}) \right\}$$

2.1150 ODE No. 1150

$$x^2 y''(x) + (x^2 - 2) y(x) = 0$$

✓ **Mathematica** : cpu = 0.010754 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow \sqrt{\frac{2}{\pi}} c_2 \left(-\sin(x) - \frac{\cos(x)}{x} \right) + \sqrt{\frac{2}{\pi}} c_1 \left(\frac{\sin(x)}{x} - \cos(x) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.067 (sec), leaf count = 31

$$\left\{ y(x) = \frac{C1 (\cos(x) x - \sin(x))}{x} + \frac{C2 (x \sin(x) + \cos(x))}{x} \right\}$$

2.1151 ODE No. 1151

$$x^2 y''(x) - (ax^2 + 2) y(x) = 0$$

✓ **Mathematica** : cpu = 0.0203574 (sec), leaf count = 129

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt{\frac{2}{\pi}} c_2 \sqrt{x} \left(i \sinh(\sqrt{ax}) - \frac{i \cosh(\sqrt{ax})}{\sqrt{ax}} \right)}{\sqrt{-i\sqrt{ax}}} + \frac{\sqrt{\frac{2}{\pi}} c_1 \sqrt{x} \left(\frac{\sinh(\sqrt{ax})}{\sqrt{ax}} - \cosh(\sqrt{ax}) \right)}{\sqrt{-i\sqrt{ax}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.09 (sec), leaf count = 43

$$\left\{ y(x) = \frac{C1}{x} e^{\sqrt{ax}} (-ax + \sqrt{a}) + \frac{C2}{x} e^{-\sqrt{ax}} (ax + \sqrt{a}) \right\}$$

2.1152 ODE No. 1152

$$(a^2 x^2 - 6) y(x) + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.020343 (sec), leaf count = 114

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt{\frac{2}{\pi}} c_1 \sqrt{x} \left(\frac{3 \sin(ax)}{a^2 x^2} - \sin(ax) - \frac{3 \cos(ax)}{ax} \right)}{\sqrt{ax}} + \frac{\sqrt{\frac{2}{\pi}} c_2 \sqrt{x} \left(-\frac{3 \cos(ax)}{a^2 x^2} - \frac{3 \sin(ax)}{ax} + \cos(ax) \right)}{\sqrt{ax}} \right\} \right\}$$

✓ **Maple** : cpu = 0.228 (sec), leaf count = 67

$$\left\{ y(x) = \frac{-C1 (\cos(ax) a^2 x^2 - 3 \sin(ax) ax - 3 \cos(ax))}{x^2} + \frac{-C2 (\sin(ax) a^2 x^2 + 3 \cos(ax) ax - 3 \sin(ax))}{x^2} \right\}$$

2.1153 ODE No. 1153

$$y(x) (ax^2 - (v - 1)v) + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0357918 (sec), leaf count = 56

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{x} J_{\frac{1}{2}(2v-1)}(\sqrt{ax}) + c_2 \sqrt{x} Y_{\frac{1}{2}(2v-1)}(\sqrt{ax}) \right\} \right\}$$

✓ **Maple** : cpu = 0.027 (sec), leaf count = 33

$$\left\{ y(x) = -C1 \sqrt{x} J_{v-\frac{1}{2}}(\sqrt{ax}) + -C2 \sqrt{x} Y_{v-\frac{1}{2}}(\sqrt{ax}) \right\}$$

2.1154 ODE No. 1154

$$y(x) (ax^2 + bx + c) + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0221314 (sec), leaf count = 88

$$\left\{ \left\{ y(x) \rightarrow c_1 M_{-\frac{ib}{2\sqrt{a}}, -\frac{1}{2}i\sqrt{4c-1}}(2i\sqrt{ax}) + c_2 W_{-\frac{ib}{2\sqrt{a}}, -\frac{1}{2}i\sqrt{4c-1}}(2i\sqrt{ax}) \right\} \right\}$$

✓ **Maple** : cpu = 0.131 (sec), leaf count = 57

$$\left\{ y(x) = -C1 M_{-\frac{i}{2}b\frac{1}{\sqrt{a}}, \frac{1}{2}\sqrt{1-4c}}(2i\sqrt{ax}) + -C2 W_{-\frac{i}{2}b\frac{1}{\sqrt{a}}, \frac{1}{2}\sqrt{1-4c}}(2i\sqrt{ax}) \right\}$$

2.1155 ODE No. 1155

$$y(x) (ax^k - (b-1)b) + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0538725 (sec), leaf count = 225

$$\left\{ \left\{ y(x) \rightarrow c_1 k^{-\frac{2(1-b)}{k} - \frac{2b}{k} + \frac{1}{k}} a^{\frac{1-b}{k} + \frac{1}{2} \left(\frac{2b}{k} - \frac{1}{k} \right)} (x^k)^{\frac{1-b}{k} + \frac{1}{2} \left(\frac{2b}{k} - \frac{1}{k} \right)} \Gamma \left(-\frac{2b}{k} + \frac{1}{k} + 1 \right) J_{\frac{1-2b}{k}} \left(\frac{2\sqrt{a}\sqrt{x^k}}{k} \right) + c_2 k^{-1/k} \right. \right.$$

✓ **Maple** : cpu = 0.04 (sec), leaf count = 69

$$\left\{ y(x) = -C1 \sqrt{x} J_{\frac{1}{k} \sqrt{(2b-1)^2}} \left(2 \frac{\sqrt{ax^{k/2}}}{k} \right) + -C2 \sqrt{x} Y_{\frac{1}{k} \sqrt{(2b-1)^2}} \left(2 \frac{\sqrt{ax^{k/2}}}{k} \right) \right\}$$

2.1156 ODE No. 1156

$$x^2 y''(x) + \frac{y(x)}{\log(x)} - e^x x(x \log(x) + 2) = 0$$

✗ **Mathematica** : cpu = 0.206872 (sec), leaf count = 0 , could not solve

`DSolve[-(E^x*x*(2 + x*Log[x])) + y[x]/Log[x] + x^2*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.141 (sec), leaf count = 73

$$\left\{ y(x) = -C2 \ln(x) + (-Ei(1, -\ln(x)) \ln(x) - x) -C1 - \left(- \int \frac{(Ei(1, -\ln(x)) \ln(x) + x) e^x (2 + x \ln(x))}{x} dx \right) \right\}$$

2.1157 ODE No. 1157

$$ay'(x) + x^2 y''(x) - xy(x) = 0$$

✗ **Mathematica** : cpu = 0.491484 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{y''(x)x^2 - y(x)x + ay'(x) = 0, y(1) = c_1, y'(1) = c_2\}) (x) \right\} \right\}$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \text{DESol} \left(\left\{ \frac{d^2}{dx^2} Y(x) + \frac{a \frac{d}{dx} Y(x)}{x^2} - \frac{Y(x)}{x} \right\}, \{Y(x)\} \right) \right\}$$

2.1158 ODE No. 1158

$$-y(x)(ab + b^2x^2) + ay'(x) + x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 14.1751 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow c_2 e^{bx} \int_1^x e^{\frac{a}{K[1]} - 2bK[1]} dK[1] + c_1 e^{bx} \right\} \right\}$$

✓ **Maple** : cpu = 0.231 (sec), leaf count = 180

$$\left\{ y(x) = _C1 e^{\frac{-bx^2+a}{x}} \text{HeunD}\left(4\sqrt{2}\sqrt{ab}, -1 - 4\sqrt{2}\sqrt{ab}, 8\sqrt{2}\sqrt{ab}, -4\sqrt{2}\sqrt{ab} + 1, 1\left(\sqrt{2}\sqrt{ab}x - a\right)\left(\sqrt{2}\sqrt{ab}x - a\right)\right) \right\}$$

2.1159 ODE No. 1159

$$-ax^2 + x^2y''(x) + xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0175694 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow \frac{ax^2}{3} + \frac{c_1(x^2 + 1)}{2x} + \frac{ic_2(x^2 - 1)}{2x} \right\} \right\}$$

✓ **Maple** : cpu = 0.016 (sec), leaf count = 19

$$\left\{ y(x) = _C2 x + \frac{ax^2}{3} + \frac{C1}{x} \right\}$$

2.1160 ODE No. 1160

$$ay(x) + x^2y''(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0112718 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin(\sqrt{a} \log(x)) + c_1 \cos(\sqrt{a} \log(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.012 (sec), leaf count = 23

$$\left\{ y(x) = _C1 \sin(\sqrt{a} \ln(x)) + _C2 \cos(\sqrt{a} \ln(x)) \right\}$$

2.1161 ODE No. 1161

$$-(a+x)y(x) + x^2y''(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0486254 (sec), leaf count = 78

$$\left\{ \left\{ y(x) \rightarrow (-1)^{-\sqrt{a}} c_1 \Gamma(1 - 2\sqrt{a}) I_{-2\sqrt{a}}(2\sqrt{x}) + (-1)^{\sqrt{a}} c_2 \Gamma(2\sqrt{a} + 1) I_{2\sqrt{a}}(2\sqrt{x}) \right\} \right\}$$

✓ **Maple** : cpu = 0.011 (sec), leaf count = 31

$$\{y(x) = _C1 I_{2\sqrt{a}}(2\sqrt{x}) + _C2 K_{2\sqrt{a}}(2\sqrt{x})\}$$

2.1162 ODE No. 1162

$$(x^2 - v^2)y(x) + x^2y''(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0609656 (sec), leaf count = 18

$$\{\{y(x) \rightarrow c_1 J_v(x) + c_2 Y_v(x)\}\}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 15

$$\{y(x) = _C1 J_v(x) + _C2 Y_v(x)\}$$

2.1163 ODE No. 1163

$$-f(x) + (x^2 - v^2)y(x) + x^2y''(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.344402 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow J_v(x) \int_1^x -\frac{\pi f(K[1]) Y_v(K[1])}{2K[1]} dK[1] + Y_v(x) \int_1^x \frac{\pi f(K[2]) J_v(K[2])}{2K[2]} dK[2] + c_1 J_v(x) + c_2 Y_v(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 50

$$\left\{ y(x) = J_v(x) _C2 + Y_v(x) _C1 - \frac{\pi}{2} \left(J_v(x) \int \frac{Y_v(x) f(x)}{x} dx - Y_v(x) \int \frac{J_v(x) f(x)}{x} dx \right) \right\}$$

2.1164 ODE No. 1164

$$y(x)(lx^2 - v^2) + x^2y''(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0250909 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow c_1 J_v(\sqrt{lx}) + c_2 Y_v(\sqrt{lx}) \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 23

$$\left\{ y(x) = _C1 J_v(\sqrt{lx}) + _C2 Y_v(\sqrt{lx}) \right\}$$

2.1165 ODE No. 1165

$$(a + x)y'(x) + x^2y''(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0507799 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1(a+x)}{a+1} - \frac{c_2 x e^{a/x}}{a^2(a+1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.015 (sec), leaf count = 19

$$\left\{ y(x) = (x+a) _C1 + _C2 e^{\frac{a}{x}} x \right\}$$

2.1166 ODE No. 1166

$$-3x^3 + x^2y''(x) - xy'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0148786 (sec), leaf count = 23

$$\left\{ \left\{ y(x) \rightarrow c_1 x + c_2 x \log(x) + \frac{3x^3}{4} \right\} \right\}$$

✓ **Maple** : cpu = 0.012 (sec), leaf count = 18

$$\left\{ y(x) = _C2 x + x \ln(x) _C1 + \frac{3x^3}{4} \right\}$$

2.1167 ODE No. 1167

$$y(x)(ax^m + b) + x^2y''(x) - xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0824791 (sec), leaf count = 326

$$\left\{ \left\{ y(x) \rightarrow c_1 m^{-\frac{2(m-i\sqrt{b-1}m)}{m^2} - \frac{2i\sqrt{b-1}}{m}} a^{\frac{m-i\sqrt{b-1}m}{m^2} + \frac{i\sqrt{b-1}}{m}} (x^m)^{\frac{m-i\sqrt{b-1}m}{m^2} + \frac{i\sqrt{b-1}}{m}} \Gamma\left(1 - \frac{2i\sqrt{b-1}}{m}\right) J_{-\frac{2i\sqrt{b-1}}{m}}\left(\frac{2\sqrt{a}x\sqrt{b-1}}{m}\right) + c_2 m^{-\frac{2(m-i\sqrt{b-1}m)}{m^2} - \frac{2i\sqrt{b-1}}{m}} a^{\frac{m-i\sqrt{b-1}m}{m^2} + \frac{i\sqrt{b-1}}{m}} (x^m)^{\frac{m-i\sqrt{b-1}m}{m^2} + \frac{i\sqrt{b-1}}{m}} \Gamma\left(1 - \frac{2i\sqrt{b-1}}{m}\right) Y_{-\frac{2i\sqrt{b-1}}{m}}\left(\frac{2\sqrt{a}x\sqrt{b-1}}{m}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.03 (sec), leaf count = 63

$$\left\{ y(x) = -C1 x J_{\frac{\sqrt{1-b}}{m}}\left(2 \frac{\sqrt{ax^{m/2}}}{m}\right) + -C2 x Y_{\frac{\sqrt{1-b}}{m}}\left(2 \frac{\sqrt{ax^{m/2}}}{m}\right) \right\}$$

2.1168 ODE No. 1168

$$x^2y''(x) + 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.00634176 (sec), leaf count = 15

$$\left\{ \left\{ y(x) \rightarrow c_2 - \frac{c_1}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.008 (sec), leaf count = 11

$$\left\{ y(x) = -C1 + \frac{-C2}{x} \right\}$$

2.1169 ODE No. 1169

$$y(x)(ax - b^2) + x^2y''(x) + 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0701869 (sec), leaf count = 236

$$\left\{ \left\{ y(x) \rightarrow c_1 a^{\frac{1}{2}(-\sqrt{4b^2+1}-1) + \frac{1}{2}\sqrt{4b^2+1}} x^{\frac{1}{2}(-\sqrt{4b^2+1}-1) + \frac{1}{2}\sqrt{4b^2+1}} \Gamma\left(1 - \sqrt{4b^2+1}\right) J_{-\sqrt{4b^2+1}}(2\sqrt{a}\sqrt{x}) + c_2 a^{\frac{1}{2}(\sqrt{4b^2+1}-1) + \frac{1}{2}\sqrt{4b^2+1}} x^{\frac{1}{2}(\sqrt{4b^2+1}-1) + \frac{1}{2}\sqrt{4b^2+1}} \Gamma\left(1 + \sqrt{4b^2+1}\right) Y_{-\sqrt{4b^2+1}}(2\sqrt{a}\sqrt{x}) \right\} \right\}$$

✓ **Maple** : cpu = 0.025 (sec), leaf count = 51

$$\left\{ y(x) = -C1 J_{\sqrt{4b^2+1}}(2\sqrt{a}\sqrt{x}) \frac{1}{\sqrt{x}} + -C2 Y_{\sqrt{4b^2+1}}(2\sqrt{a}\sqrt{x}) \frac{1}{\sqrt{x}} \right\}$$

2.1170 ODE No. 1170

$$y(x) (ax^2 + b) + x^2 y''(x) + 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.02449 (sec), leaf count = 58

$$\left\{ \left\{ y(x) \rightarrow c_1 j_{\frac{1}{2}(\sqrt{1-4b}-1)}(\sqrt{ax}) + c_2 y_{\frac{1}{2}(\sqrt{1-4b}-1)}(\sqrt{ax}) \right\} \right\}$$

✓ **Maple** : cpu = 0.036 (sec), leaf count = 45

$$\left\{ y(x) = -C1 J_{\frac{1}{2}\sqrt{-4b+1}}(\sqrt{ax}) \frac{1}{\sqrt{x}} + -C2 Y_{\frac{1}{2}\sqrt{-4b+1}}(\sqrt{ax}) \frac{1}{\sqrt{x}} \right\}$$

2.1171 ODE No. 1171

$$y(x) (ax + lx^2 - n(n+1)) + x^2 y''(x) + 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0538188 (sec), leaf count = 142

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{n \log(x) - i\sqrt{l}x} U \left(\frac{i(a - 2i\sqrt{l}n - 2i\sqrt{l})}{2\sqrt{l}}, 2n + 2, 2i\sqrt{l}x \right) + c_2 e^{n \log(x) - i\sqrt{l}x} L_{-\frac{i(a - 2i\sqrt{l}n - 2i\sqrt{l})}{2\sqrt{l}}}^{2n+1} \left(2i\sqrt{l}x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.132 (sec), leaf count = 51

$$\left\{ y(x) = \frac{C1}{x} M_{-\frac{i}{2}a\frac{1}{\sqrt{l}}, n+\frac{1}{2}}(2i\sqrt{l}x) + \frac{C2}{x} W_{-\frac{i}{2}a\frac{1}{\sqrt{l}}, n+\frac{1}{2}}(2i\sqrt{l}x) \right\}$$

2.1172 ODE No. 1172

$$ay(x) + x^2 y''(x) + 2(x-1)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0551905 (sec), leaf count = 158

$$\left\{ \left\{ y(x) \rightarrow 2^{\frac{1}{2}(1-\sqrt{1-4a})} c_1 \left(\frac{1}{x} \right)^{\frac{1}{2}(1-\sqrt{1-4a})} {}_1F_1 \left(\frac{1}{2} - \frac{1}{2}\sqrt{1-4a}; 1 - \sqrt{1-4a}; -\frac{2}{x} \right) + 2^{\frac{1}{2}(\sqrt{1-4a}+1)} c_2 \left(\frac{1}{x} \right)^{\frac{1}{2}(\sqrt{1-4a}+1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 57

$$\left\{ y(x) = -C1 e^{-x^{-1}} \sqrt{x^{-1}} I_{\frac{1}{2}\sqrt{1-4a}}(x^{-1}) + -C2 e^{-x^{-1}} \sqrt{x^{-1}} K_{\frac{1}{2}\sqrt{1-4a}}(x^{-1}) \right\}$$

2.1173 ODE No. 1173

$$2(a+x)y'(x) - (b-1)by(x) + x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0601122 (sec), leaf count = 74

$$\left\{ \left\{ y(x) \rightarrow (-2)^{1-b} c_1 a^{1-b} \left(\frac{1}{x}\right)^{1-b} {}_1F_1\left(1-b; 2-2b; \frac{2a}{x}\right) + (-2)^b c_2 a^b \left(\frac{1}{x}\right)^b {}_1F_1\left(b; 2b; \frac{2a}{x}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.085 (sec), leaf count = 45

$$\left\{ y(x) = -C1 e^{\frac{a}{x}} I_{b-\frac{1}{2}}\left(\frac{a}{x}\right) \frac{1}{\sqrt{x}} + -C2 e^{\frac{a}{x}} K_{b-\frac{1}{2}}\left(\frac{a}{x}\right) \frac{1}{\sqrt{x}} \right\}$$

2.1174 ODE No. 1174

$$x^5(-\log(x)) + x^2y''(x) - 2xy'(x) + 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0204739 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow c_2 x^2 + c_1 x + \frac{1}{144} (12x^5 \log(x) - 7x^5) \right\} \right\}$$

✓ **Maple** : cpu = 0.021 (sec), leaf count = 24

$$\left\{ y(x) = -C2 x + -C1 x^2 + \frac{x^5(12 \ln(x) - 7)}{144} \right\}$$

2.1175 ODE No. 1175

$$-(ax^2 + 12a + 4) \cos(x) + x^2y''(x) - 2xy'(x) - 4y(x) - x \sin(x) = 0$$

✓ **Mathematica** : cpu = 0.172783 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow \frac{-2a \sin(x) - ax \cos(x) - \sin(x)}{x} + c_2 x^4 + \frac{c_1}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.053 (sec), leaf count = 33

$$\left\{ y(x) = \frac{-C1}{x} + -C2 x^4 - \frac{ax \cos(x) + 2 \sin(x) a + \sin(x)}{x} \right\}$$

2.1176 ODE No. 1176

$$x^2 y''(x) + (x^2 + 2) y(x) - 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0188471 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-ix} x - \frac{1}{2} i c_2 e^{ix} x \right\} \right\}$$

✓ **Maple** : cpu = 0.031 (sec), leaf count = 15

$$\{y(x) = _C1 x \sin(x) + _C2 \cos(x) x\}$$

2.1177 ODE No. 1177

$$x^2 y''(x) + (x^2 + 2) y'(x) + x^2 (-\sec(x)) - 2xy'(x) = 0$$

✗ **Mathematica** : cpu = 300.006 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.065 (sec), leaf count = 39

$$\left\{ y(x) = x \sin(x) _C2 + \cos(x) x _C1 + x \left(\ln(x) \sin(x) - \cos(x) \int \frac{\sin(x)}{\cos(x) x} dx \right) \right\}$$

2.1178 ODE No. 1178

$$x^3 (-\sec(x)) + x^2 y''(x) + (x^2 + 2) y(x) - 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0547803 (sec), leaf count = 74

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-ix} x - \frac{1}{2} i c_2 e^{ix} x + \frac{1}{2} e^{-ix} x (e^{2ix} \log(1 + e^{-2ix}) + \log(1 + e^{2ix})) \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 28

$$\{y(x) = x \sin(x) _C2 + \cos(x) x _C1 + x(x \sin(x) + \cos(x) \ln(\cos(x)))\}$$

2.1179 ODE No. 1179

$$(a^2x^2 + 2)y(x) + x^2y''(x) - 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0430158 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow c_1 x e^{-\sqrt{-a^2}x} + \frac{c_2 x e^{\sqrt{-a^2}x}}{2\sqrt{-a^2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 19

$$\{y(x) = _C1 x \sin(ax) + _C2 x \cos(ax)\}$$

2.1180 ODE No. 1180

$$-f(x) + (-v^2 + x^2 + 1)y(x) + x^2y''(x) + 3xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.222955 (sec), leaf count = 73

$$\left\{ \left\{ y(x) \rightarrow \frac{J_v(x) \int_1^x -\frac{1}{2}\pi f(K[1])Y_v(K[1]) dK[1] + Y_v(x) \int_1^x \frac{1}{2}\pi f(K[2])J_v(K[2]) dK[2]}{x} + \frac{c_1 J_v(x)}{x} + \frac{c_2 Y_v(x)}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.048 (sec), leaf count = 53

$$\left\{ y(x) = \frac{J_v(x)_C2}{x} + \frac{Y_v(x)_C1}{x} - \frac{\pi (J_v(x) \int Y_v(x)f(x) dx - Y_v(x) \int J_v(x)f(x) dx)}{2x} \right\}$$

2.1181 ODE No. 1181

$$x^2y''(x) + (3x - 1)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0308433 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-1/x}}{x} - \frac{c_2 e^{-1/x} \text{Ei}\left(\frac{1}{x}\right)}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.017 (sec), leaf count = 25

$$\left\{ y(x) = \frac{1}{e^{x^{-1}}x} (_C1 \text{Ei}(1, -x^{-1}) + _C2) \right\}$$

2.1182 ODE No. 1182

$$x^2 y''(x) - 3xy'(x) + 4y(x) - 5x = 0$$

✓ **Mathematica** : cpu = 0.0180298 (sec), leaf count = 24

$$\left\{ \left\{ y(x) \rightarrow c_1 x^2 + 2c_2 x^2 \log(x) + 5x \right\} \right\}$$

✓ **Maple** : cpu = 0.012 (sec), leaf count = 20

$$\{y(x) = x^2_C2 + _C1 x^2 \ln(x) + 5x\}$$

2.1183 ODE No. 1183

$$x^2 y''(x) + x^2(-\log(x)) - 3xy'(x) - 5y(x) = 0$$

✓ **Mathematica** : cpu = 0.0298014 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow c_1 x^5 + \frac{c_2}{x} - \frac{1}{9} x^2 \log(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.011 (sec), leaf count = 22

$$\left\{ y(x) = _C2 x^5 + \frac{_C1}{x} - \frac{x^2 \ln(x)}{9} \right\}$$

2.1184 ODE No. 1184

$$-x^4 + x^2 y''(x) + x^2 - 4xy'(x) + 6y(x) = 0$$

✓ **Mathematica** : cpu = 0.0208178 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow c_2 x^3 + c_1 x^2 + \frac{1}{2}(x^4 + 2x^2 + 2x^2 \log(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.028 (sec), leaf count = 29

$$\left\{ y(x) = x^3 _C2 + _C1 x^2 + \frac{x^2(x^2 + 2 \ln(x) + 2)}{2} \right\}$$

2.1185 ODE No. 1185

$$-(2x^3 - 4)y(x) + x^2y''(x) + 5xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0381338 (sec), leaf count = 67

$$\left\{ \left\{ y(x) \rightarrow \frac{3\sqrt[3]{6}c_2K_0\left(\frac{2}{3}\sqrt{2}x^{3/2}\right)}{x^2} - \frac{3\sqrt[3]{-3}c_1I_0\left(\frac{2}{3}\sqrt{2}x^{3/2}\right)}{2^{2/3}x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.03 (sec), leaf count = 35

$$\left\{ y(x) = \frac{C1}{x^2} I_0\left(\frac{2\sqrt{2}}{3}x^{3/2}\right) + \frac{C2}{x^2} K_0\left(\frac{2\sqrt{2}}{3}x^{3/2}\right) \right\}$$

2.1186 ODE No. 1186

$$x^3(-\sin(x)) + x^2y''(x) - 5xy'(x) + 8y(x) = 0$$

✓ **Mathematica** : cpu = 0.033493 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow c_2x^4 + c_1x^2 + \frac{1}{2}(x^4\text{Ci}(x) - x^3\sin(x) + x^2\cos(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 34

$$\left\{ y(x) = _C2 x^4 + _C1 x^2 + \frac{x^2(\cos(x) + x(x\text{Ci}(x) - \sin(x)))}{2} \right\}$$

2.1187 ODE No. 1187

$$axy'(x) + by(x) + x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0138383 (sec), leaf count = 99

$$\left\{ \left\{ y(x) \rightarrow c_1x^{\frac{1}{2}\sqrt{b}\left(-\frac{\sqrt{a^2-2a-4b+1}}{\sqrt{b}} - \frac{a-1}{\sqrt{b}}\right)} + c_2x^{\frac{1}{2}\sqrt{b}\left(\frac{\sqrt{a^2-2a-4b+1}}{\sqrt{b}} - \frac{a-1}{\sqrt{b}}\right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.014 (sec), leaf count = 53

$$\left\{ y(x) = _C1 x^{-\frac{a}{2} + \frac{1}{2} + \frac{1}{2}\sqrt{a^2 - 2a - 4b + 1}} + _C2 x^{-\frac{a}{2} + \frac{1}{2} - \frac{1}{2}\sqrt{a^2 - 2a - 4b + 1}} \right\}$$

2.1188 ODE No. 1188

$$(ax + b)y'(x) + cy(x) + x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0841881 (sec), leaf count = 266

$$\left\{ \left\{ y(x) \rightarrow c_1 i^{-\sqrt{a^2-2a-4c+1}+a-1} b^{\frac{1}{2}(-\sqrt{a^2-2a-4c+1}+a-1)} \left(\frac{1}{x}\right)^{\frac{1}{2}(-\sqrt{a^2-2a-4c+1}+a-1)} {}_1F_1\left(\frac{a}{2} - \frac{1}{2}\sqrt{a^2-2a-4c+1}, \frac{b}{x}\right) + \dots \right. \right.$$

✓ **Maple** : cpu = 0.168 (sec), leaf count = 135

$$\left\{ y(x) = {}_1F_1\left(\frac{a}{2} - \frac{1}{2}\sqrt{a^2-2a-4c+1}, \frac{b}{x}\right) + \dots \right.$$

2.1189 ODE No. 1189

$$axy'(x) + y(x)(bx^m + c) + x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0728354 (sec), leaf count = 445

$$\left\{ \left\{ y(x) \rightarrow c_1 m^{-\frac{-\sqrt{a^2-2a-4c+1}-a+1}{m} - \frac{\sqrt{a^2-2a-4c+1}}{m}} b^{-\frac{\sqrt{a^2-2a-4c+1}-a+1}{2m} + \frac{\sqrt{a^2-2a-4c+1}}{2m}} (x^m)^{-\frac{\sqrt{a^2-2a-4c+1}-a+1}{2m} + \frac{\sqrt{a^2-2a-4c+1}}{2m}} + \dots \right. \right.$$

✓ **Maple** : cpu = 0.03 (sec), leaf count = 85

$$\left\{ y(x) = {}_1F_1\left(\frac{1}{2} - \frac{a}{2}, \frac{\sqrt{b}x^{m/2}}{m}\right) + {}_2F_2\left(\frac{1}{2} - \frac{a}{2}, \frac{\sqrt{b}x^{m/2}}{m}\right) + \dots \right.$$

2.1190 ODE No. 1190

$$y(x)(ax + b) + x^2y''(x) + x^2y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0319082 (sec), leaf count = 122

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{2}((\sqrt{1-4b}+1)\log(x)-2x)} U\left(\frac{1}{2}(-2a + \sqrt{1-4b} + 1), \sqrt{1-4b} + 1, x\right) + c_2 e^{\frac{1}{2}((\sqrt{1-4b}+1)\log(x)-2x)} + \dots \right. \right.$$

✓ **Maple** : cpu = 0.104 (sec), leaf count = 41

$$\left\{ y(x) = {}_1F_1\left(\frac{1}{2}, \frac{x}{\sqrt{1-4b}+1}\right) + {}_2F_2\left(\frac{1}{2}, \frac{x}{\sqrt{1-4b}+1}\right) + \dots \right.$$

2.1191 ODE No. 1191

$$x^2 y''(x) + x^2 y'(x) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0113738 (sec), leaf count = 110

$$\left\{ \left\{ y(x) \rightarrow \frac{2c_2 e^{\frac{1}{2}(\log(x)-x)} \left(i \sinh\left(\frac{x}{2}\right) - \frac{2i \cosh\left(\frac{x}{2}\right)}{x} \right)}{\sqrt{\pi} \sqrt{-ix}} + \frac{2c_1 e^{\frac{1}{2}(\log(x)-x)} \left(\frac{2 \sinh\left(\frac{x}{2}\right)}{x} - \cosh\left(\frac{x}{2}\right) \right)}{\sqrt{\pi} \sqrt{-ix}} \right\} \right\}$$

✓ **Maple** : cpu = 0.015 (sec), leaf count = 25

$$\left\{ y(x) = \frac{-C1(x-2)}{x} + \frac{-C2 e^{-x}(x+2)}{x} \right\}$$

2.1192 ODE No. 1192

$$x^2 y''(x) + (x^2 - 1) y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 10.839 (sec), leaf count = 39

$$\left\{ \left\{ y(x) \rightarrow c_2 e^{-x} \int_1^x e^{K[1] - \frac{1}{K[1]}} dK[1] + c_1 e^{-x} \right\} \right\}$$

✓ **Maple** : cpu = 0.137 (sec), leaf count = 53

$$\left\{ y(x) = -C1 e^{-x} \text{HeunD}\left(4, 3, -8, 5, \frac{x-1}{1+x}\right) \sqrt{x} + -C2 e^{-x^{-1}} \text{HeunD}\left(-4, 3, -8, 5, \frac{x-1}{1+x}\right) \sqrt{x} \right\}$$

2.1193 ODE No. 1193

$$x^2 y''(x) + (x+1)xy'(x) + (x-9)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0502676 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1((x-8)x+20)}{x^3} - \frac{c_2 e^{-x}(x^3+9x^2+36x+60)}{x^3} \right\} \right\}$$

✓ **Maple** : cpu = 0.039 (sec), leaf count = 40

$$\left\{ y(x) = \frac{-C1(x^2-8x+20)}{x^3} + \frac{-C2 e^{-x}(x^3+9x^2+36x+60)}{x^3} \right\}$$

2.1194 ODE No. 1194

$$x^2 y''(x) + (x+1)xy'(x) + (3x-1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.051966 (sec), leaf count = 65

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-x} (x-3)x - \frac{c_2 e^{-x} (x^3 (-\text{Ei}(x)) + 3x^2 \text{Ei}(x) + e^x x^2 - 2e^x x - e^x)}{6x} \right\} \right\}$$

✓ **Maple** : cpu = 0.059 (sec), leaf count = 44

$$\left\{ y(x) = _C1 x e^{-x} (x-3) + \frac{_C2 (x^2 e^{-x} (x-3) \text{Ei}(1, -x) + x^2 - 2x - 1)}{x} \right\}$$

2.1195 ODE No. 1195

$$x^2 y''(x) + (x+3)xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0299838 (sec), leaf count = 80

$$\left\{ \left\{ y(x) \rightarrow c_1 U\left(2 + \sqrt{2}, 1 + 2\sqrt{2}, x\right) e^{(\sqrt{2}-1)\log(x)-x} + c_2 L_{-2-\sqrt{2}}^{2\sqrt{2}}(x) e^{(\sqrt{2}-1)\log(x)-x} \right\} \right\}$$

✓ **Maple** : cpu = 0.122 (sec), leaf count = 94

$$\left\{ y(x) = _C1 e^{-\frac{x}{2}} \left((\sqrt{2} + x + 1) I_{-\frac{1}{2} + \sqrt{2}}\left(\frac{x}{2}\right) + (-\sqrt{2} + x + 1) I_{\frac{1}{2} + \sqrt{2}}\left(\frac{x}{2}\right) \right) \frac{1}{\sqrt{x}} + _C2 \left((\sqrt{2} + x + 1) \right) \right\}$$

2.1196 ODE No. 1196

$$x^2 y''(x) - (x-1)xy'(x) + (x-1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0274959 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 (x^2 \text{Ei}(x) - e^x x - e^x)}{2x} + c_1 x \right\} \right\}$$

✓ **Maple** : cpu = 0.036 (sec), leaf count = 27

$$\left\{ y(x) = _C1 x + _C2 \left(\frac{(1+x)e^x}{x} + \text{Ei}(1, -x) x \right) \right\}$$

2.1197 ODE No. 1197

$$-(a+x)y(x) + x^2y''(x) - (x^2 - 2x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0201052 (sec), leaf count = 78

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{2}(x-\log(x))} J_{\frac{1}{2}\sqrt{4a+1}}\left(-\frac{ix}{2}\right) + c_2 e^{\frac{1}{2}(x-\log(x))} Y_{\frac{1}{2}\sqrt{4a+1}}\left(-\frac{ix}{2}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.044 (sec), leaf count = 49

$$\left\{ y(x) = -C1 e^{\frac{x}{2}} I_{\frac{1}{2}\sqrt{4a+1}}\left(\frac{x}{2}\right) \frac{1}{\sqrt{x}} + -C2 e^{\frac{x}{2}} K_{\frac{1}{2}\sqrt{4a+1}}\left(\frac{x}{2}\right) \frac{1}{\sqrt{x}} \right\}$$

2.1198 ODE No. 1198

$$x^2y''(x) - (x^2 - 2x)y'(x) - (3x + 2)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0313082 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow c_1 e^x x - \frac{c_2 (e^x x^3 \text{Ei}(-x) + x^2 - x + 2)}{6x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 33

$$\left\{ y(x) = -C1 x e^x + \frac{-C2 (-e^x x^3 \text{Ei}(1, x) + x^2 - x + 2)}{x^2} \right\}$$

2.1199 ODE No. 1199

$$x^2y''(x) - (x+4)xy'(x) + 4y(x) = 0$$

✓ **Mathematica** : cpu = 0.0140166 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow c_2 e^x x^4 - \frac{1}{6} c_1 x (e^x x^3 \text{Ei}(-x) + x^2 - x + 2) \right\} \right\}$$

✓ **Maple** : cpu = 0.018 (sec), leaf count = 32

$$\left\{ y(x) = -C1 x^4 e^x + -C2 x (e^x x^3 \text{Ei}(1, x) - x^2 + x - 2) \right\}$$

2.1200 ODE No. 1200

$$-(v-1)vy(x) + x^2y''(x) + 2x^2y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0237147 (sec), leaf count = 62

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-x} \sqrt{x} J_{\frac{1}{2}(2v-1)}(-ix) + c_2 e^{-x} \sqrt{x} Y_{\frac{1}{2}(2v-1)}(-ix) \right\} \right\}$$

✓ **Maple** : cpu = 0.016 (sec), leaf count = 33

$$\left\{ y(x) = _C1 e^{-x} \sqrt{x} I_{v-\frac{1}{2}}(x) + _C2 e^{-x} \sqrt{x} K_{v-\frac{1}{2}}(x) \right\}$$

2.1201 ODE No. 1201

$$x^2y''(x) + (2x+1)xy'(x) - 4y(x) = 0$$

✓ **Mathematica** : cpu = 0.0565485 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-2x}(2x+3)}{2x^2} + \frac{c_2(2x^2-4x+3)}{4x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.019 (sec), leaf count = 34

$$\left\{ y(x) = \frac{_C1(2x^2-4x+3)}{x^2} + \frac{_C2 e^{-2x}(2x+3)}{x^2} \right\}$$

2.1202 ODE No. 1202

$$x^2y''(x) - 2(x+1)xy'(x) + 2(x+1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0161733 (sec), leaf count = 22

$$\left\{ \left\{ y(x) \rightarrow c_1 x + \frac{1}{2} c_2 e^{2x} x \right\} \right\}$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 15

$$\{y(x) = _C1 x + _C2 e^{2x} x\}$$

2.1203 ODE No. 1203

$$ax^2y'(x) + x^2y''(x) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0234004 (sec), leaf count = 124

$$\left\{ \left\{ y(x) \rightarrow \frac{2c_2 e^{\frac{1}{2}(\log(x)-ax)} \left(i \sinh\left(\frac{ax}{2}\right) - \frac{2i \cosh\left(\frac{ax}{2}\right)}{ax} \right)}{\sqrt{\pi} \sqrt{-iax}} + \frac{2c_1 e^{\frac{1}{2}(\log(x)-ax)} \left(\frac{2 \sinh\left(\frac{ax}{2}\right)}{ax} - \cosh\left(\frac{ax}{2}\right) \right)}{\sqrt{\pi} \sqrt{-iax}} \right\} \right\}$$

✓ **Maple** : cpu = 0.021 (sec), leaf count = 30

$$\left\{ y(x) = \frac{-C1(ax-2)}{x} + \frac{-C2 e^{-ax}(ax+2)}{x} \right\}$$

2.1204 ODE No. 1204

$$x^2(a+2b)y'(x) + y(x)(bx^2(a+b)-2) + x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0222398 (sec), leaf count = 132

$$\left\{ \left\{ y(x) \rightarrow \frac{2c_2 e^{\frac{1}{2}(-ax-2bx+\log(x))} \left(i \sinh\left(\frac{ax}{2}\right) - \frac{2i \cosh\left(\frac{ax}{2}\right)}{ax} \right)}{\sqrt{\pi} \sqrt{-iax}} + \frac{2c_1 e^{\frac{1}{2}(-ax-2bx+\log(x))} \left(\frac{2 \sinh\left(\frac{ax}{2}\right)}{ax} - \cosh\left(\frac{ax}{2}\right) \right)}{\sqrt{\pi} \sqrt{-iax}} \right\} \right\}$$

✓ **Maple** : cpu = 0.053 (sec), leaf count = 37

$$\left\{ y(x) = \frac{-C1 e^{-bx}(ax-2)}{x} + \frac{-C2 e^{-(a+b)x}(ax+2)}{x} \right\}$$

2.1205 ODE No. 1205

$$ax^2y'(x) + f(x)y(x) + x^2y''(x) = 0$$

✗ **Mathematica** : cpu = 0.208196 (sec), leaf count = 0 , could not solve

`DSolve[f[x]*y[x] + a*x^2*Derivative[1][y][x] + x^2*Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{ \frac{f(x)-Y(x)}{x^2} + a \frac{d}{dx} Y(x) + \frac{d^2}{dx^2} Y(x) \right\}, \{-Y(x)\}\right) \right\}$$

2.1206 ODE No. 1206

$$y(x) (abx + cx^2 + d) + x(2ax + b)y'(x) + x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.11439 (sec), leaf count = 120

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{2}(-2ax - (b-1)\log(x))} J_{\frac{1}{2}\sqrt{b^2 - 2b - 4d + 1}}(-i\sqrt{a^2 - cx}) + c_2 e^{\frac{1}{2}(-2ax - (b-1)\log(x))} Y_{\frac{1}{2}\sqrt{b^2 - 2b - 4d + 1}}(-i\sqrt{a^2 - cx}) \right\} \right\}$$

✓ **Maple** : cpu = 0.069 (sec), leaf count = 87

$$\left\{ y(x) = {}_0C_1 e^{-ax} x^{-\frac{b}{2} + \frac{1}{2}} J_{\frac{1}{2}\sqrt{b^2 - 2b - 4d + 1}}(\sqrt{-a^2 + cx}) + {}_0C_2 e^{-ax} x^{-\frac{b}{2} + \frac{1}{2}} Y_{\frac{1}{2}\sqrt{b^2 - 2b - 4d + 1}}(\sqrt{-a^2 + cx}) \right\}$$

2.1207 ODE No. 1207

$$x(ax + b)y'(x) + y(x) (a_1x^2 + b_1x + c_1) + x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.121528 (sec), leaf count = 294

$$\left\{ \left\{ y(x) \rightarrow c_1 U\left(-\frac{-ab + 2b_1 - \sqrt{a^2 - 4a_1} - \sqrt{a^2 - 4a_1}\sqrt{b^2 - 2b - 4c_1 + 1}}{2\sqrt{a^2 - 4a_1}}, \sqrt{b^2 - 2b - 4c_1 + 1} + 1, \sqrt{a^2 - 4a_1}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.227 (sec), leaf count = 119

$$\left\{ y(x) = {}_0C_1 e^{-\frac{ax}{2}} x^{-\frac{b}{2}} M_{-\frac{ab - 2b_1}{2}, \frac{1}{\sqrt{a^2 - 4a_1}}, \frac{1}{2}\sqrt{b^2 - 2b - 4c_1 + 1}}(\sqrt{a^2 - 4a_1}x) + {}_0C_2 e^{-\frac{ax}{2}} x^{-\frac{b}{2}} W_{-\frac{ab - 2b_1}{2}, \frac{1}{\sqrt{a^2 - 4a_1}}, \frac{1}{2}\sqrt{b^2 - 2b - 4c_1 + 1}}(\sqrt{a^2 - 4a_1}x) \right\}$$

2.1208 ODE No. 1208

$$x^3y'(x) + x^2y''(x) + (x^2 - 2)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0402828 (sec), leaf count = 59

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 e^{-\frac{x^2}{2}} \left(\sqrt{2\pi} e^{\frac{x^2}{2}} \operatorname{erf}\left(\frac{x}{\sqrt{2}}\right) - 2x \right)}{2x} + \frac{c_1}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.044 (sec), leaf count = 39

$$\left\{ y(x) = \frac{C_1}{x} + \frac{C_2}{x} \left(\sqrt{\pi} \sqrt{2} \operatorname{Erf}\left(\frac{\sqrt{2}x}{2}\right) - 2xe^{-1/2x^2} \right) \right\}$$

2.1209 ODE No. 1209

$$x^2 y''(x) + (x^2 + 2) x y'(x) + (x^2 - 2) y(x) = 0$$

✓ **Mathematica** : cpu = 0.0230558 (sec), leaf count = 67

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-\frac{x^2}{2}} \left(e^{\frac{x^2}{2}} x - \sqrt{\frac{\pi}{2}} \operatorname{erfi} \left(\frac{x}{\sqrt{2}} \right) \right)}{x^2} + \frac{c_2 e^{-\frac{x^2}{2}}}{x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 48

$$\left\{ y(x) = \frac{C1}{x^2} e^{-\frac{x^2}{2}} + \frac{C2}{x^2} \left(i e^{-\frac{x^2}{2}} \sqrt{2} \sqrt{\pi} \operatorname{Erf} \left(\frac{i}{2} \sqrt{2} x \right) + 2 x \right) \right\}$$

2.1210 ODE No. 1210

$$y(x) (a((-1)^n - 1) + 2nx^2) - 2x(x^2 - a) y'(x) + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.257968 (sec), leaf count = 252

$$\left\{ \left\{ y(x) \rightarrow c_1 (-1)^{\frac{1}{4}} \left(-\sqrt{4a^2 - 4a(-1)^{n+1} - 2a+1} \right) x^{\frac{1}{2}} \left(-\sqrt{4a^2 - 4a(-1)^{n+1} - 2a+1} \right) {}_1F_1 \left(-\frac{a}{2} - \frac{n}{2} - \frac{1}{4} \sqrt{4a^2 - 4(-1)^n a +} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.661 (sec), leaf count = 93

$$\left\{ y(x) = {}_C1 x^{-a-\frac{1}{2}} e^{\frac{x^2}{2}} M_{\frac{n}{2}+\frac{a}{2}+\frac{1}{4}, \frac{1}{4} \sqrt{1-4(-1)^n a+4a^2}}(x^2) + {}_C2 x^{-a-\frac{1}{2}} e^{\frac{x^2}{2}} W_{\frac{n}{2}+\frac{a}{2}+\frac{1}{4}, \frac{1}{4} \sqrt{1-4(-1)^n a+4a^2}}(x^2) \right\}$$

2.1211 ODE No. 1211

$$4x^3 y'(x) + x^2 y''(x) + (4x^4 + 2x^2 + 1) y(x) = 0$$

✓ **Mathematica** : cpu = 0.056163 (sec), leaf count = 68

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-x^2} x^{\frac{1}{2}-\frac{i\sqrt{3}}{2}} - \frac{ic_2 e^{-x^2} x^{\frac{1}{2}+\frac{i\sqrt{3}}{2}}}{\sqrt{3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.058 (sec), leaf count = 41

$$\left\{ y(x) = {}_C1 x^{\frac{1}{2}+\frac{i}{2}\sqrt{3}} e^{-x^2} + {}_C2 x^{\frac{1}{2}-\frac{i}{2}\sqrt{3}} e^{-x^2} \right\}$$

2.1212 ODE No. 1212

$$x(ax^2 + b)y'(x) + f(x)y(x) + x^2y''(x) = 0$$

✗ **Mathematica** : cpu = 0.378462 (sec), leaf count = 0 , could not solve

DSolve[f[x]*y[x] + x*(b + a*x^2)*Derivative[1][y][x] + x^2*Derivative[2][y][x] == 0, y

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{f(x) - Y(x)}{x^2} + \frac{(ax^2 + b) \frac{d}{dx} Y(x)}{x} + \frac{d^2}{dx^2} Y(x) \right\}, \{-Y(x)\} \right) \right\}$$

2.1213 ODE No. 1213

$$(x^3 + 1)xy'(x) + x^2y''(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.075937 (sec), leaf count = 54

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{3}c_1 {}_1F_1\left(-\frac{1}{3}; \frac{1}{3}; -\frac{x^3}{3}\right)}{x} + \frac{c_2 x {}_1F_1\left(\frac{1}{3}; \frac{5}{3}; -\frac{x^3}{3}\right)}{\sqrt[3]{3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.059 (sec), leaf count = 59

$$\left\{ y(x) = {}_C1 e^{-\frac{x^3}{6}} x^{\frac{3}{2}} \left(I_{\frac{5}{6}}\left(\frac{x^3}{6}\right) + I_{-\frac{1}{6}}\left(\frac{x^3}{6}\right) \right) + {}_C2 e^{-\frac{x^3}{6}} x^{\frac{3}{2}} \left(K_{\frac{5}{6}}\left(\frac{x^3}{6}\right) - K_{\frac{1}{6}}\left(\frac{x^3}{6}\right) \right) \right\}$$

2.1214 ODE No. 1214

$$y(x)(-a^2 + x^2(2a + 2n + 1) + a(-1)^n - x^4) + x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.309898 (sec), leaf count = 260

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-\frac{x^2}{2}} 2^{\frac{1}{4}} (\sqrt{4a^2 - 4a(-1)^{n+1} + 2}) (x^2)^{\frac{1}{4}} (\sqrt{4a^2 - 4a(-1)^{n+1} + 2}) U\left(\frac{1}{4}(-2a - 2n + \sqrt{4a^2 - 4(-1)^n a + 1})\right)}{\sqrt{x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.601 (sec), leaf count = 73

$$\left\{ y(x) = {}_C1 M_{\frac{n}{2} + \frac{a}{2} + \frac{1}{4}, \frac{1}{4} \sqrt{1 - 4(-1)^n a + 4a^2}}(x^2) \frac{1}{\sqrt{x}} + {}_C2 W_{\frac{n}{2} + \frac{a}{2} + \frac{1}{4}, \frac{1}{4} \sqrt{1 - 4(-1)^n a + 4a^2}}(x^2) \frac{1}{\sqrt{x}} \right\}$$

2.1215 ODE No. 1215

$$xy'(x)(ax^n + b) + y(x)(a1x^{2n} + b1x^n + c1) + x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.161466 (sec), leaf count = 664

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{\frac{1-n}{2}} 2^{\frac{\sqrt{b^2 n^2 - 2bn^2 - 4c1n^2 + n^2}}{2n^2}} (x^n)^{\frac{\sqrt{b^2 n^2 - 2bn^2 - 4c1n^2 + n^2}}{2n^2}} \exp\left(\frac{1}{2}\left(-\frac{ax^n}{n} - b \log(x)\right) - \frac{\sqrt{a^2 - 4a}}{2n}\right) \right. \right.$$

✓ **Maple** : cpu = 0.196 (sec), leaf count = 167

$$\left\{ y(x) = _C1 x^{-\frac{b}{2} - \frac{n}{2} + \frac{1}{2}} e^{-\frac{ax^n}{2n}} M_{-\frac{(b+n-1)a-2b1}{2n}, \frac{1}{\sqrt{a^2-4a1}}, \frac{1}{2n}} \sqrt{b^2-2b-4c1+1} \left(\frac{x^n}{n} \sqrt{a^2-4a1}\right) + _C2 x^{-\frac{b}{2} - \frac{n}{2} + \frac{1}{2}} e^{-\frac{ax^n}{2n}} \right.$$

2.1216 ODE No. 1216

$$xy'(x)(ax^{a1} + b) + y(x)(Ax^{2a1} + Bx^{a1} + Cx^{b1} + DD) + x^2y''(x) = 0$$

✗ **Mathematica** : cpu = 1.46237 (sec), leaf count = 0 , could not solve

`DSolve[(DD + B*x^a1 + A*x^(2*a1) + C*x^b1)*y[x] + x*(b + a*x^a1)*Derivative[1][y][x] + x^2*y''[x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{\frac{d^2}{dx^2} Y(x) + \frac{(ax^{a1} + b) \frac{d}{dx} Y(x)}{x} + \frac{(Ax^{2a1} + Bx^{a1} + Cx^{b1} + DD) Y(x)}{x^2}\right\}, \{-Y(x)\}\right) \right.$$

2.1217 ODE No. 1217

$$-y(x)(a + x \tan(x)) + x^2y''(x) - (2x^2 \tan(x) - x) y'(x) = 0$$

✓ **Mathematica** : cpu = 0.145914 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow c_1 \sec(x) J_{\sqrt{a}}(x) + c_2 \sec(x) Y_{\sqrt{a}}(x) \right\} \right.$$

✓ **Maple** : cpu = 0.037 (sec), leaf count = 27

$$\left\{ y(x) = \frac{-C1}{\cos(x)} J_{\sqrt{a}}(x) + \frac{-C2}{\cos(x)} Y_{\sqrt{a}}(x) \right\}$$

2.1218 ODE No. 1218

$$y(x)(a + x \cot(x)) + x^2 y''(x) + (2x^2 \cot(x) + x) y'(x) = 0$$

✓ **Mathematica** : cpu = 0.143224 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow c_1 \csc(x) J_{i\sqrt{a}}(x) + c_2 \csc(x) Y_{i\sqrt{a}}(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.04 (sec), leaf count = 33

$$\left\{ y(x) = \frac{C1}{\sin(x)} J_{i\sqrt{a}}(x) + \frac{C2}{\sin(x)} Y_{i\sqrt{a}}(x) \right\}$$

2.1219 ODE No. 1219

$$y(x) (ax^2 + bx + c + xf'(x) + f(x)^2 - f(x)) + 2xf(x)y'(x) + x^2y''(x) = 0$$

✗ **Mathematica** : cpu = 300.032 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.084 (sec), leaf count = 79

$$\left\{ y(x) = _C1 M_{-\frac{i}{2}b\frac{1}{\sqrt{a}}, \frac{1}{2}\sqrt{1-4c}}(2i\sqrt{ax}) e^{-\int \frac{f(x)}{x} dx} + _C2 W_{-\frac{i}{2}b\frac{1}{\sqrt{a}}, \frac{1}{2}\sqrt{1-4c}}(2i\sqrt{ax}) e^{-\int \frac{f(x)}{x} dx} \right\}$$

2.1220 ODE No. 1220

$$y(x) (x^2(a + f'(x) + f(x)^2) - (v - 1)v) + 2x^2 f(x)y'(x) + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 193.502 (sec), leaf count = 96

$$\left\{ \left\{ y(x) \rightarrow c_1 J_{\frac{1}{2}(2v-1)}(\sqrt{ax}) \exp\left(\int_1^x \frac{1 - 2K[1]f(K[1])}{2K[1]} dK[1]\right) + c_2 Y_{\frac{1}{2}(2v-1)}(\sqrt{ax}) \exp\left(\int_1^x \frac{1 - 2K[1]f(K[1])}{2K[1]} dK[1]\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.02 (sec), leaf count = 51

$$\left\{ y(x) = _C1 e^{-\frac{\int 2f(x) dx}{2}} \sqrt{x} J_{v-\frac{1}{2}}(\sqrt{ax}) + _C2 e^{-\frac{\int 2f(x) dx}{2}} \sqrt{x} Y_{v-\frac{1}{2}}(\sqrt{ax}) \right\}$$

2.1221 ODE No. 1221

$$y(x) (x^2 (-f'(x) + f(x)^2 + 1) - xf(x) - v^2) + (x - 2x^2 f(x)) y'(x) + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0587843 (sec), leaf count = 40

$$\left\{ \left\{ y(x) \rightarrow c_1 J_v(x) e^{\int_1^x f(K[1]) dK[1]} + c_2 Y_v(x) e^{\int_1^x f(K[1]) dK[1]} \right\} \right\}$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 53

$$\left\{ y(x) = _C1 e^{-\frac{1}{2} \int \frac{-2xf(x)+1}{x} dx} \sqrt{x} J_v(x) + _C2 e^{-\frac{1}{2} \int \frac{-2xf(x)+1}{x} dx} \sqrt{x} Y_v(x) \right\}$$

2.1222 ODE No. 1222

$$(x^2 + 1) y''(x) + xy'(x) + 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0218456 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin \left(\sqrt{2} \sinh^{-1}(x) \right) + c_1 \cos \left(\sqrt{2} \sinh^{-1}(x) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.013 (sec), leaf count = 23

$$\left\{ y(x) = _C1 \sin \left(\sqrt{2} \operatorname{Arcsinh}(x) \right) + _C2 \cos \left(\sqrt{2} \operatorname{Arcsinh}(x) \right) \right\}$$

2.1223 ODE No. 1223

$$(x^2 + 1) y''(x) + xy'(x) - 9y(x) = 0$$

✓ **Mathematica** : cpu = 0.0200777 (sec), leaf count = 25

$$\left\{ \left\{ y(x) \rightarrow c_1 \cosh \left(3 \sinh^{-1}(x) \right) + ic_2 \sinh \left(3 \sinh^{-1}(x) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.017 (sec), leaf count = 39

$$\left\{ y(x) = _C1 \sin \left(3 \arctan \left(\frac{x}{\sqrt{-x^2 - 1}} \right) \right) + _C2 \cos \left(3 \arctan \left(\frac{x}{\sqrt{-x^2 - 1}} \right) \right) \right\}$$

2.1224 ODE No. 1224

$$ay(x) + (x^2 + 1)y''(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0194531 (sec), leaf count = 30

$$\{\{y(x) \rightarrow c_2 \sin(\sqrt{a} \sinh^{-1}(x)) + c_1 \cos(\sqrt{a} \sinh^{-1}(x))\}\}$$

✓ **Maple** : cpu = 0.015 (sec), leaf count = 23

$$\{y(x) = _C1 \sin(\sqrt{a} \operatorname{Arcsinh}(x)) + _C2 \cos(\sqrt{a} \operatorname{Arcsinh}(x))\}$$

2.1225 ODE No. 1225

$$(x^2 + 1)y''(x) - xy'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0329404 (sec), leaf count = 29

$$\{\{y(x) \rightarrow c_2(x \sinh^{-1}(x) - \sqrt{x^2 + 1}) + c_1 x\}\}$$

✓ **Maple** : cpu = 0.036 (sec), leaf count = 24

$$\{y(x) = _C1 x + _C2 (\operatorname{Arcsinh}(x) x - \sqrt{x^2 + 1})\}$$

2.1226 ODE No. 1226

$$-(v - 1)vy(x) + (x^2 + 1)y''(x) + 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0201702 (sec), leaf count = 30

$$\{\{y(x) \rightarrow c_1 P_{v-1}(ix) + c_2 Q_{v-1}(ix)\}\}$$

✓ **Maple** : cpu = 0.043 (sec), leaf count = 25

$$\{y(x) = _C1 \operatorname{LegendreP}(v - 1, ix) + _C2 \operatorname{LegendreQ}(v - 1, ix)\}$$

2.1227 ODE No. 1227

$$(x^2 + 1) y''(x) - 2xy'(x) + 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0350514 (sec), leaf count = 21

$$\left\{ \left\{ y(x) \rightarrow c_2 x - c_1 (x - i)^2 \right\} \right\}$$

✓ **Maple** : cpu = 0.014 (sec), leaf count = 15

$$\left\{ y(x) = _C1 x + _C2 (x^2 - 1) \right\}$$

2.1228 ODE No. 1228

$$ay(x) + (x^2 + 1) y''(x) + 3xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.016133 (sec), leaf count = 82

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 P_{\frac{1}{2}}^{\frac{1}{2}}(2\sqrt{1-a}-1)(ix)}{\sqrt[4]{x^2+1}} + \frac{c_2 Q_{\frac{1}{2}}^{\frac{1}{2}}(2\sqrt{1-a}-1)(ix)}{\sqrt[4]{x^2+1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.092 (sec), leaf count = 59

$$\left\{ y(x) = _C1 (x + \sqrt{x^2 + 1})^{\sqrt{1-a}} \frac{1}{\sqrt{x^2 + 1}} + _C2 (x + \sqrt{x^2 + 1})^{-\sqrt{1-a}} \frac{1}{\sqrt{x^2 + 1}} \right\}$$

2.1229 ODE No. 1229

$$(x^2 + 1) y''(x) + 4xy'(x) + 2y(x) + 2x - 2 \cos(x) = 0$$

✓ **Mathematica** : cpu = 0.0419093 (sec), leaf count = 48

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{x^2 + 1} + \frac{c_2 x}{x^2 + 1} + \frac{-x^3 - 6 \cos(x)}{3(x^2 + 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.019 (sec), leaf count = 41

$$\left\{ y(x) = \frac{_C1 x}{x^2 + 1} + \frac{_C2}{x^2 + 1} - \frac{x^3 + 6 \cos(x)}{3x^2 + 3} \right\}$$

2.1230 ODE No. 1230

$$axy'(x) + (a - 2)y(x) + (x^2 + 1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.02755 (sec), leaf count = 82

$$\left\{ \left\{ y(x) \rightarrow c_1 (x^2 + 1)^{\frac{2-a}{4}} P_{\frac{a-2}{2}}^{\frac{a-2}{2}}(ix) + c_2 (x^2 + 1)^{\frac{2-a}{4}} Q_{\frac{a-2}{2}}^{\frac{a-2}{2}}(ix) \right\} \right\}$$

✓ **Maple** : cpu = 0.114 (sec), leaf count = 36

$$\left\{ y(x) = _C1 (x^2 + 1)^{1-\frac{a}{2}} + _C2 {}_2F_1\left(1, -\frac{1}{2} + \frac{a}{2}; \frac{3}{2}; -x^2\right)x \right\}$$

2.1231 ODE No. 1231

$$(x^2 - 1)y''(x) - v(v + 1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0754922 (sec), leaf count = 58

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_2F_1\left(-\frac{v}{2} - \frac{1}{2}, \frac{v}{2}; \frac{1}{2}; x^2\right) + ic_2 x {}_2F_1\left(\frac{v}{2} + \frac{1}{2}, -\frac{v}{2}; \frac{3}{2}; x^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.05 (sec), leaf count = 57

$$\left\{ y(x) = _C1 (-x^2 + 1) {}_2F_1\left(1 + \frac{v}{2}, \frac{1}{2} - \frac{v}{2}; \frac{1}{2}; x^2\right) + _C2 (-x^3 + x) {}_2F_1\left(1 - \frac{v}{2}, \frac{3}{2} + \frac{v}{2}; \frac{3}{2}; x^2\right) \right\}$$

2.1232 ODE No. 1232

$$\frac{nxP_n(x) - nP_{n-1}(x)}{x^2 - 1} - n(n + 1)y(x) + (x^2 - 1)y''(x) = 0$$

✗ **Mathematica** : cpu = 300. (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.208 (sec), leaf count = 418

$$\left\{ y(x) = (-x^2 + 1) {}_2F_1\left(\frac{n}{2} + 1, -\frac{n}{2} + \frac{1}{2}; \frac{1}{2}; x^2\right) _C2 + (-x^3 + x) {}_2F_1\left(1 - \frac{n}{2}, \frac{n}{2} + \frac{3}{2}; \frac{3}{2}; x^2\right) _C1 - 3(n + 1) \right\}$$

2.1233 ODE No. 1233

$$\frac{nxQ_n(x) - nQ_{n-1}(x)}{x^2 - 1} - n(n+1)y(x) + (x^2 - 1)y''(x) = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.131 (sec), leaf count = 418

$$\left\{ y(x) = (-x^2 + 1) {}_2F_1\left(\frac{n}{2} + 1, -\frac{n}{2} + \frac{1}{2}; \frac{1}{2}; x^2\right) C2 + (-x^3 + x) {}_2F_1\left(1 - \frac{n}{2}, \frac{n}{2} + \frac{3}{2}; \frac{3}{2}; x^2\right) C1 - 3(n + 1) \right\}$$

2.1234 ODE No. 1234

$$(x^2 - 1)y''(x) + xy'(x) + 2 = 0$$

✓ **Mathematica** : cpu = 0.0294229 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow \log\left(\sqrt{x^2 - 1} + x\right) \left(c_1 - \log\left(\sqrt{x^2 - 1} + x\right) \right) + c_2 \right\} \right\}$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.1235 ODE No. 1235

$$ay(x) + (x^2 - 1)y''(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0287086 (sec), leaf count = 50

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin\left(\sqrt{a} \log\left(\sqrt{x^2 - 1} + x\right)\right) + c_1 \cos\left(\sqrt{a} \log\left(\sqrt{x^2 - 1} + x\right)\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.474 (sec), leaf count = 43

$$\left\{ y(x) = C1 \left(x + \sqrt{x^2 - 1} \right)^{i\sqrt{a}} + C2 \left(\left(x + \sqrt{x^2 - 1} \right)^{i\sqrt{a}} \right)^{-1} \right\}$$

2.1236 ODE No. 1236

$$f(x)y(x) + (x^2 - 1)y''(x) + xy'(x) = 0$$

✗ **Mathematica** : cpu = 0.372551 (sec), leaf count = 0 , could not solve

`DSolve[f[x]*y[x] + x*Derivative[1][y][x] + (-1 + x^2)*Derivative[2][y][x] == 0, y[x],`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{f(x) - Y(x)}{x^2 - 1} + \frac{x \frac{d}{dx} Y(x)}{x^2 - 1} + \frac{d^2}{dx^2} Y(x) \right\}, \{ -Y(x) \} \right) \right\}$$

2.1237 ODE No. 1237

$$(x^2 - 1)y''(x) + 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0115089 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow c_1 \left(\frac{1}{2} \log(1 - x) - \frac{1}{2} \log(x + 1) \right) + c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.126 (sec), leaf count = 21

$$\left\{ y(x) = -C1 + \left(-\frac{\ln(1 + x)}{2} + \frac{\ln(x - 1)}{2} \right) - C2 \right\}$$

2.1238 ODE No. 1238

$$-a + (x^2 - 1)y''(x) + 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0192301 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2}(a + c_1) \log(1 - x) + \frac{1}{2}(a - c_1) \log(x + 1) + c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 34

$$\left\{ y(x) = \frac{\ln(x - 1) - C1}{2} + \frac{\ln(x - 1) a}{2} - \frac{\ln(1 + x) - C1}{2} + \frac{\ln(1 + x) a}{2} + -C2 \right\}$$

2.1239 ODE No. 1239

$$-ly(x) + (x^2 - 1)y''(x) + 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0145586 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow c_1 P_{\frac{1}{2}(\sqrt{4l+1}-1)}(x) + c_2 Q_{\frac{1}{2}(\sqrt{4l+1}-1)}(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.955 (sec), leaf count = 35

$$\left\{ y(x) = _C1 \text{LegendreP}\left(\frac{1}{2}\sqrt{1+4l} - \frac{1}{2}, x\right) + _C2 \text{LegendreQ}\left(\frac{1}{2}\sqrt{1+4l} - \frac{1}{2}, x\right) \right\}$$

2.1240 ODE No. 1240

$$-v(v+1)y(x) + (x^2 - 1)y''(x) + 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0190051 (sec), leaf count = 18

$$\left\{ \left\{ y(x) \rightarrow c_1 P_v(x) + c_2 Q_v(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.052 (sec), leaf count = 15

$$\{y(x) = _C1 \text{LegendreP}(v, x) + _C2 \text{LegendreQ}(v, x)\}$$

2.1241 ODE No. 1241

$$-(v-1)(v+2)y(x) + (x^2 - 1)y''(x) - 2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0162798 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow c_1 (x^2 - 1) P_v^2(x) + c_2 (x^2 - 1) Q_v^2(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.206 (sec), leaf count = 29

$$\{y(x) = _C1 (x-1)(1+x) \text{LegendreP}(v, 2, x) + _C2 (x-1)(1+x) \text{LegendreQ}(v, 2, x)\}$$

2.1242 ODE No. 1242

$$(x^2 - 1)y''(x) - (x^2 - x)y(x) - (3x + 1)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0769645 (sec), leaf count = 68

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-x}(x+1)^2 - c_2 e^{-x-2} (x^2 (-\text{Ei}(2(x+1)))) - 2x \text{Ei}(2(x+1)) - \text{Ei}(2(x+1)) + 2e^{2x+2} \right\} \right\}$$

✓ **Maple** : cpu = 0.594 (sec), leaf count = 42

$$\left\{ y(x) = _C1 e^{-x}(1+x)^2 + _C2 (e^{-2-x}(1+x)^2 \text{Ei}(1, -2x-2) + 2e^x) \right\}$$

2.1243 ODE No. 1243

$$(x^2 - 1)y''(x) + (x^2 + 1)y(x) + 4xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0305694 (sec), leaf count = 45

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-ix}}{x^2 - 1} - \frac{ic_2 e^{ix}}{2(x^2 - 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.438 (sec), leaf count = 27

$$\left\{ y(x) = \frac{-C1 \sin(x)}{x^2 - 1} + \frac{-C2 \cos(x)}{x^2 - 1} \right\}$$

2.1244 ODE No. 1244

$$-(v-n)(n+v+1)y(x) + 2(n+1)xy'(x) + (x^2 - 1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0295716 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow c_1 (x^2 - 1)^{-n/2} P_v^n(x) + c_2 (x^2 - 1)^{-n/2} Q_v^n(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.241 (sec), leaf count = 35

$$\left\{ y(x) = _C1 (x^2 - 1)^{-\frac{n}{2}} \text{LegendreP}(v, n, x) + _C2 (x^2 - 1)^{-\frac{n}{2}} \text{LegendreQ}(v, n, x) \right\}$$

2.1245 ODE No. 1245

$$-(-n + v + 1)(n + v)y(x) - 2(n - 1)xy'(x) + (x^2 - 1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0220082 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow c_1(x^2 - 1)^{n/2} P_v^n(x) + c_2(x^2 - 1)^{n/2} Q_v^n(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.064 (sec), leaf count = 35

$$\left\{ y(x) = _C1 (x^2 - 1)^{\frac{n}{2}} \text{LegendreP}(v, n, x) + _C2 (x^2 - 1)^{\frac{n}{2}} \text{LegendreQ}(v, n, x) \right\}$$

2.1246 ODE No. 1246

$$-2(v - 1)xy'(x) - 2vy(x) + (x^2 - 1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.020783 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow c_1(x^2 - 1)^{v/2} P_v^v(x) + c_2(x^2 - 1)^{v/2} Q_v^v(x) \right\} \right\}$$

✓ **Maple** : cpu = 1.063 (sec), leaf count = 35

$$\left\{ y(x) = _C1 (x^2 - 1)^v + _C2 (x^2 - 1)^v x {}_2F_1\left(\frac{1}{2}, v + 1; \frac{3}{2}; x^2\right) \right\}$$

2.1247 ODE No. 1247

$$2axy'(x) + (a - 1)ay(x) + (x^2 - 1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.216562 (sec), leaf count = 97

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{1 - x^2} (x^2 - 1)^{-a/2} e^{-\sqrt{(a-1)^2} \tanh^{-1}(x)} + \frac{c_2 \sqrt{1 - x^2} (x^2 - 1)^{-a/2} e^{\sqrt{(a-1)^2} \tanh^{-1}(x)}}{2\sqrt{(a-1)^2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 27

$$\left\{ y(x) = _C1 (x - 1)^{1-a} + _C2 (1 + x)^{1-a} \right\}$$

2.1248 ODE No. 1248

$$axy'(x) + y(x)(bx^2 + cx + d) + (x^2 - 1)y''(x) = 0$$

✗ **Mathematica** : cpu = 2.09782 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{(bx^2 + cx + d)y(x) + xay'(x) + (x^2 - 1)y''(x) = 0, y(0) = c_1, y'(0) = c_2\}) \right\} \right\}$$

✓ **Maple** : cpu = 0.936 (sec), leaf count = 150

$$\left\{ y(x) = _C1 e^{\sqrt{-bx}} (x^2 - 1)^{-\frac{a}{4}} ((1+x)(x-1))^{\frac{a}{4}} \text{HeunC}\left(4\sqrt{-b}, \frac{a}{2} - 1, \frac{a}{2} - 1, 2c, d - c - \frac{a^2}{8} + b + \frac{1}{2}, \frac{x}{2}\right) \right\}$$

2.1249 ODE No. 1249

$$(ax + b)y'(x) + cy(x) + (x^2 - 1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.173699 (sec), leaf count = 193

$$\left\{ \left\{ y(x) \rightarrow c_2 2^{\frac{1}{2}(a+b-2)} (x-1)^{\frac{1}{2}(-a-b+2)} {}_2F_1\left(-\frac{b}{2} - \frac{1}{2}\sqrt{a^2 - 2a - 4c + 1} + \frac{1}{2}, -\frac{b}{2} + \frac{1}{2}\sqrt{a^2 - 2a - 4c + 1} + \frac{1}{2}, \frac{x}{2}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.08 (sec), leaf count = 134

$$\left\{ y(x) = _C1 {}_2F_1\left(-\frac{1}{2} + \frac{a}{2} - \frac{1}{2}\sqrt{a^2 - 2a - 4c + 1}, -\frac{1}{2} + \frac{a}{2} + \frac{1}{2}\sqrt{a^2 - 2a - 4c + 1}, \frac{a}{2} - \frac{b}{2}; \frac{1}{2} + \frac{x}{2}\right) + _C2 \right\}$$

2.1250 ODE No. 1250

$$(x^2 - a^2)y''(x) + 8xy'(x) + 12y(x) = 0$$

✓ **Mathematica** : cpu = 0.0529225 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2(a^2 + 3x^2)}{3(a-x)^3(a+x)^3} + \frac{c_1}{(a+x)^3} \right\} \right\}$$

✓ **Maple** : cpu = 0.075 (sec), leaf count = 52

$$\left\{ y(x) = \frac{_C1(a^2 + 3x^2)}{(a-x)^3(x+a)^3} + \frac{_C2 x(3a^2 + x^2)}{(a-x)^3(x+a)^3} \right\}$$

2.1251 ODE No. 1251

$$x(x+1)y''(x) - (x-1)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0380058 (sec), leaf count = 25

$$\{ \{ y(x) \rightarrow c_1(x-1) + c_2(x \log(x) - \log(x) - 4) \} \}$$

✓ **Maple** : cpu = 0.05 (sec), leaf count = 20

$$\{ y(x) = _C1(x-1) + _C2(-4 + (x-1)\ln(x)) \}$$

2.1252 ODE No. 1252

$$(ax+b)y'(x) + cy(x) + x(x+1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.149488 (sec), leaf count = 151

$$\left\{ \left\{ y(x) \rightarrow c_2 x^{1-b} {}_2F_1 \left(\frac{a}{2} - b - \frac{1}{2} \sqrt{a^2 - 2a - 4c + 1} + \frac{1}{2}, \frac{a}{2} - b + \frac{1}{2} \sqrt{a^2 - 2a - 4c + 1} + \frac{1}{2}; 2 - b; -x \right) + \right. \right.$$

✓ **Maple** : cpu = 0.056 (sec), leaf count = 124

$$\left. \left\{ y(x) = _C1 {}_2F_1 \left(-\frac{1}{2} + \frac{a}{2} - \frac{1}{2} \sqrt{a^2 - 2a - 4c + 1}, -\frac{1}{2} + \frac{a}{2} + \frac{1}{2} \sqrt{a^2 - 2a - 4c + 1}; a - b; 1 + x \right) + _C2 \right\} \right.$$

2.1253 ODE No. 1253

$$x(x+1)y''(x) + (3x+2)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0272207 (sec), leaf count = 34

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt{2}c_1}{x} + \frac{c_2 \log(2x+2)}{\sqrt{2}x} \right\} \right\}$$

✓ **Maple** : cpu = 0.009 (sec), leaf count = 16

$$\left\{ y(x) = \frac{\ln(1+x) _C1 + _C2}{x} \right\}$$

2.1254 ODE No. 1254

$$(x^2 + x - 2)y''(x) + (x^2 - x)y'(x) - (6x^2 + 7x)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0910969 (sec), leaf count = 69

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{5}c_2e^{-3x-5}(195e^{5x}x\text{Ei}(5-5x) - 195e^{5x}\text{Ei}(5-5x) + e^5x + 44e^5) - c_1e^{2x}(x-1) \right\} \right\}$$

✓ **Maple** : cpu = 0.115 (sec), leaf count = 44

$$\{y(x) = _C1 e^{2x}(x-1) + _C2 (195 e^{-5+2x}(x-1) \text{Ei}(1, 5x-5) - e^{-3x}(x+44))\}$$

2.1255 ODE No. 1255

$$ay'(x) + (x-1)xy''(x) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.212453 (sec), leaf count = 118

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1(a^2 + 2ax - a + 2x^2 - 2x)}{a^2 + 3a + 4} + \frac{c_2x^{a+1}(a^2 + 2ax - a + 2x^2 - 2x)(1-x)^{1-a}}{(a-1)a(a+1)(a^2 + 3a + 4)(a^2 + a(2x-1) + 2(x-1)x)} \right\} \right\}$$

✓ **Maple** : cpu = 0.108 (sec), leaf count = 42

$$\left\{ y(x) = (a^2 + 2ax + 2x^2 - a - 2x) _C1 + \frac{_C2 (x-1)x^ax}{(x-1)^a} \right\}$$

2.1256 ODE No. 1256

$$-v(v+1)y(x) + (x-1)xy''(x) + (2x-1)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0245812 (sec), leaf count = 26

$$\{\{y(x) \rightarrow c_1P_v(2x-1) + c_2Q_v(2x-1)\}\}$$

✓ **Maple** : cpu = 0.143 (sec), leaf count = 51

$$\{y(x) = _C1 {}_2F_1(-v, -v; -2v; x^{-1})x^v + _C2 {}_2F_1(v+1, v+1; 2+2v; x^{-1})x^{-v-1}\}$$

2.1257 ODE No. 1257

$$((a+1)x+b)y'(x) + (x-1)xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0496385 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 x^{b+1} {}_2F_1(b+1, a+b+1; b+2; x)}{b+1} + c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.358 (sec), leaf count = 27

$$\{y(x) = _C1 + {}_2F_1(b+1, a+b+1; b+2; x)x^{b+1} _C2\}$$

2.1258 ODE No. 1258

$$(ax+b)y'(x) + cy(x) + (x-1)xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.164758 (sec), leaf count = 146

$$\left\{ \left\{ y(x) \rightarrow (-1)^{b+1} c_2 x^{b+1} {}_2F_1\left(\frac{a}{2} + b - \frac{1}{2}\sqrt{a^2 - 2a - 4c + 1} + \frac{1}{2}, \frac{a}{2} + b + \frac{1}{2}\sqrt{a^2 - 2a - 4c + 1} + \frac{1}{2}; b+2; x\right) + c_1 \right\} \right\}$$

✓ **Maple** : cpu = 0.054 (sec), leaf count = 110

$$\{y(x) = _C1 {}_2F_1\left(-\frac{1}{2} + \frac{a}{2} - \frac{1}{2}\sqrt{a^2 - 2a - 4c + 1}, -\frac{1}{2} + \frac{a}{2} + \frac{1}{2}\sqrt{a^2 - 2a - 4c + 1}; -b; x\right) + _C2 x^{b+1}\}$$

2.1259 ODE No. 1259

$$((a+1)x+b)y'(x) - ly(x) + (x-1)xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.142454 (sec), leaf count = 120

$$\left\{ \left\{ y(x) \rightarrow (-1)^{b+1} c_2 x^{b+1} {}_2F_1\left(\frac{a}{2} + b - \frac{1}{2}\sqrt{a^2 + 4l} + 1, \frac{a}{2} + b + \frac{1}{2}\sqrt{a^2 + 4l} + 1; b+2; x\right) + c_1 {}_2F_1\left(\frac{a}{2} - \frac{1}{2}\sqrt{a^2 + 4l} + 1, \frac{a}{2} + \frac{1}{2}\sqrt{a^2 + 4l} + 1; b+2; x\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.059 (sec), leaf count = 92

$$\{y(x) = _C1 {}_2F_1\left(\frac{a}{2} - \frac{1}{2}\sqrt{a^2 + 4l}, \frac{a}{2} + \frac{1}{2}\sqrt{a^2 + 4l}; -b; x\right) + _C2 x^{b+1} {}_2F_1\left(\frac{a}{2} - \frac{1}{2}\sqrt{a^2 + 4l} + b + 1, \frac{a}{2} + \frac{1}{2}\sqrt{a^2 + 4l} + b + 1; b+2; x\right)\}$$

2.1260 ODE No. 1260

$$y'(x)(x(a1 + b1 + 1) - d1) + a1b1d1 + (x - 1)xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.169875 (sec), leaf count = 65

$$\left\{ \left\{ y(x) \rightarrow a1b1x\Gamma(d1 + 1) {}_3\tilde{F}_2(1, a1 + b1 + 1, 1; d1 + 1, 2; x) - \frac{c_1x^{1-d1} {}_2F_1(1 - d1, a1 + b1 - d1 + 1; 2 - d1; x)}{d1 - 1} \right. \right.$$

✓ **Maple** : cpu = 0.846 (sec), leaf count = 76

$$\left\{ y(x) = \int \left(-a1 b1 (\text{signum}(x - 1))^{a1+b1-d1} (-\text{signum}(x - 1))^{-a1-b1+d1} {}_2F_1(d1, -a1 - b1 + d1; 1 + d1; x) \right) dx \right.$$

2.1261 ODE No. 1261

$$y(x)(2lx(-n+p-1)+2lp+m)+2(x(-2l+n+1)-lx^2+n+1)y'(x)+x(x+2)y''(x) = 0$$

✗ **Mathematica** : cpu = 2.76288 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{(-2xl - 2xnl + 2xpl + 2pl + m)y(x) + 2(-lx^2 - 2lx + nx + x + n)\}) \right. \right.$$

✓ **Maple** : cpu = 0.257 (sec), leaf count = 124

$$\left\{ y(x) = _C1 \text{HeunC} \left(4l, n, n, -4pl, \frac{(4n + 4p + 4)l}{2} - \frac{n^2}{2} + m - n, -\frac{x}{2} \right) (x + 2)^{-\frac{n}{2} - \frac{1}{2}} \left(-\frac{x}{2} - 1 \right)^{\frac{n}{2} + \frac{1}{2}} \right.$$

2.1262 ODE No. 1262

$$(x^2 + x - 1)y'(x) + (x + 1)^2y''(x) - (x + 2)y(x) = 0$$

✓ **Mathematica** : cpu = 40.8554 (sec), leaf count = 87

$$\left\{ \left\{ y(x) \rightarrow c_2 e^{-x} \int_1^x (K[1] + 1)^{\frac{K[1]}{K[1]+1} + \frac{1}{K[1]+1}} \exp \left(-\frac{K[1]^2}{K[1] + 1} - \frac{K[1]}{K[1] + 1} + 2K[1] - \frac{1}{K[1] + 1} \right) dK[1] + c_1 \right. \right.$$

✓ **Maple** : cpu = 0.403 (sec), leaf count = 55

$$\left\{ y(x) = _C1 e^{-x} \text{HeunD} \left(4, 4, -8, 12, \frac{x}{x+2} \right) (1+x) + _C2 \text{HeunD} \left(-4, 4, -8, 12, \frac{x}{x+2} \right) (1+x) e^{\frac{x-1}{2x+1}} \right.$$

2.1263 ODE No. 1263

$$-(20x + 30)(x^2 + 3x)^{7/3} + x(x + 3)y''(x) + (3x - 1)y'(x) + y(x) = 0$$

✗ **Mathematica** : cpu = 300.185 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.108 (sec), leaf count = 52

$$\left\{ y(x) = 1 \left(-C2 + \int \frac{1}{x^2 + 3x} \left(-C1 + 3(x^2 + 3x)^{7/3} x(x + 3) \right) (x + 3)^{7/3} x^{-4/3} dx \right) x^{4/3} (x + 3)^{-7/3} \right\}$$

2.1264 ODE No. 1264

$$(x^2 + 3x + 4)y''(x) + (x^2 + x + 1)y'(x) - (2x + 3)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0604482 (sec), leaf count = 23

$$\left\{ \left\{ y(x) \rightarrow c_2(x^2 + x + 3) + c_1 e^{-x} \right\} \right\}$$

✓ **Maple** : cpu = 0.126 (sec), leaf count = 19

$$\left\{ y(x) = _C1 e^{-x} + _C2 (x^2 + x + 3) \right\}$$

2.1265 ODE No. 1265

$$(x - 2)(x - 1)y''(x) - (2x - 3)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0421221 (sec), leaf count = 64

$$\left\{ \left\{ y(x) \rightarrow c_1(x^2 - 3x + 2) P_{\frac{1}{2}}^2(-1 + \sqrt{5})(2x - 3) + c_2(x^2 - 3x + 2) Q_{\frac{1}{2}}^2(-1 + \sqrt{5})(2x - 3) \right\} \right\}$$

✓ **Maple** : cpu = 0.236 (sec), leaf count = 97

$$\left\{ y(x) = _C1 {}_2F_1\left(\frac{1}{2} - \frac{\sqrt{5}}{2}, \frac{5}{2} - \frac{\sqrt{5}}{2}; -\sqrt{5} + 1; (x - 1)^{-1}\right) (x - 2)^2 (x - 1)^{\frac{\sqrt{5}}{2} - \frac{1}{2}} + _C2 {}_2F_1\left(\frac{1}{2} + \frac{\sqrt{5}}{2}, \frac{5}{2} + \frac{\sqrt{5}}{2}; -\sqrt{5} + 1; (x - 1)^{-1}\right) (x - 2)^2 (x - 1)^{\frac{\sqrt{5}}{2} + \frac{1}{2}} \right\}$$

2.1266 ODE No. 1266

$$(x-2)^2 y''(x) - (x-2)y'(x) - 3y(x) = 0$$

✓ **Mathematica** : cpu = 0.0286162 (sec), leaf count = 22

$$\left\{ \left\{ y(x) \rightarrow c_1(x-2)^3 + \frac{c_2}{x-2} \right\} \right\}$$

✓ **Maple** : cpu = 0.025 (sec), leaf count = 19

$$\left\{ y(x) = _C1 (x-2)^3 + \frac{_C2}{x-2} \right\}$$

2.1267 ODE No. 1267

$$-(l+2x^2-5x)y'(x) + 2x^2y''(x) - (4x-1)y(x) = 0$$

✗ **Mathematica** : cpu = 300.104 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.067 (sec), leaf count = 41

$$\left\{ y(x) = e^x \left(_C1 \int \frac{1}{2e^x} e^{\frac{l}{2x}} x^{-\frac{3}{2}} dx + _C2 \right) \left(e^{\frac{l}{2x}} \right)^{-1} \frac{1}{\sqrt{x}} \right\}$$

2.1268 ODE No. 1268

$$y(x)(ax+b) + 2(x-1)xy''(x) + (2x-1)y'(x) = 0$$

✗ **Mathematica** : cpu = 1.41281 (sec), leaf count = 0 , DifferentialRoot result

{ {y(x) → DifferentialRoot({y, x}, {(xa + b)y(x) + (2x - 1)y'(x) + 2(x - 1)xy''(x) = 0, y(2) = c1, y'(2) = c2})}

✓ **Maple** : cpu = 0.147 (sec), leaf count = 39

$$\left\{ y(x) = _C1 \operatorname{MathieuC}\left(-a - 2b, \frac{a}{2}, \arccos(\sqrt{x})\right) + _C2 \operatorname{MathieuS}\left(-a - 2b, \frac{a}{2}, \arccos(\sqrt{x})\right) \right\}$$

2.1269 ODE No. 1269

$$((2v + 5)x - 2v - 3)y'(x) + (v + 1)y(x) + 2(x - 1)xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0841974 (sec), leaf count = 60

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_2F_1\left(\frac{1}{2}, v + 1; v + \frac{3}{2}; x\right) + c_2 i^{-2v-1} x^{\frac{1}{2}(-2v-1)} {}_2F_1\left(\frac{1}{2}, -v; \frac{1}{2} - v; x\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.093 (sec), leaf count = 40

$$\left\{ y(x) = _C1 {}_2F_1\left(\frac{1}{2}, v + 1; \frac{3}{2} + v; x\right) + _C2 x^{-\frac{1}{2}-v} {}_2F_1\left(\frac{1}{2}, -v; \frac{1}{2} - v; x\right) \right\}$$

2.1270 ODE No. 1270

$$(2x^2 + 6x + 4)y''(x) + (10x^2 + 21x + 8)y'(x) + (12x^2 + 17x + 8)y(x) = 0$$

✗ **Mathematica** : cpu = 300.009 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.199 (sec), leaf count = 54

$$\left\{ y(x) = _C1 e^{-2x} (x + 2)^4 \text{HeunC}\left(-1, -\frac{5}{2}, 4, -\frac{7}{4}, \frac{7}{2}, -1 - x\right) + _C2 e^{-2x} (x + 2)^4 (1 + x)^{\frac{5}{2}} \text{HeunC}\left(-\right) \right\}$$

2.1271 ODE No. 1271

$$4x^2 y''(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.01256 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{x} + \frac{1}{2} c_2 \sqrt{x} \log(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.009 (sec), leaf count = 17

$$\{ y(x) = _C1 \sqrt{x} + _C2 \sqrt{x} \ln(x) \}$$

2.1272 ODE No. 1272

$$(4a^2x^2 + 1)y(x) + 4x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0121514 (sec), leaf count = 32

$$\{ \{ y(x) \rightarrow c_1\sqrt{x}J_0(ax) + c_2\sqrt{x}Y_0(ax) \} \}$$

✓ **Maple** : cpu = 0.086 (sec), leaf count = 25

$$\{ y(x) = _C1 \sqrt{x}J_0(ax) + _C2 \sqrt{x}Y_0(ax) \}$$

2.1273 ODE No. 1273

$$4x^2y''(x) - y(x)(-4kx + 4m^2 + x^2 - 1) = 0$$

✓ **Mathematica** : cpu = 0.0180157 (sec), leaf count = 20

$$\{ \{ y(x) \rightarrow c_1M_{k,m}(x) + c_2W_{k,m}(x) \} \}$$

✓ **Maple** : cpu = 0.308 (sec), leaf count = 17

$$\{ y(x) = _C1 M_{k,m}(x) + _C2 W_{k,m}(x) \}$$

2.1274 ODE No. 1274

$$(x - v^2)y(x) + 4x^2y''(x) + 4xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0418888 (sec), leaf count = 38

$$\{ \{ y(x) \rightarrow c_1\Gamma(1-v)J_{-v}(\sqrt{x}) + c_2\Gamma(v+1)J_v(\sqrt{x}) \} \}$$

✓ **Maple** : cpu = 0.013 (sec), leaf count = 19

$$\{ y(x) = _C1 J_v(\sqrt{x}) + _C2 Y_v(\sqrt{x}) \}$$

2.1275 ODE No. 1275

$$y(x) (2x(2l - m + 1) - m^2 - x^2 + 1) + 4x^2 y''(x) + 4xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0355848 (sec), leaf count = 120

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{2}(\sqrt{m^2-1} \log(x)-x)} U\left(\frac{1}{2}(-2l+m+\sqrt{m^2-1}), \sqrt{m^2-1}+1, x\right) + c_2 e^{\frac{1}{2}(\sqrt{m^2-1} \log(x)-x)} L_{\frac{1}{2}}^{\sqrt{m^2-1}}\left(\frac{x}{2}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.524 (sec), leaf count = 55

$$\left\{ y(x) = -C1 M_{l-\frac{m}{2}+\frac{1}{2}, \frac{1}{2}\sqrt{m-1}\sqrt{m+1}}(x) \frac{1}{\sqrt{x}} + -C2 W_{l-\frac{m}{2}+\frac{1}{2}, \frac{1}{2}\sqrt{m-1}\sqrt{m+1}}(x) \frac{1}{\sqrt{x}} \right\}$$

2.1276 ODE No. 1276

$$-4e^x \sqrt{x^3} + 4x^2 y''(x) - (4x^2 + 1) y(x) + 4xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.043186 (sec), leaf count = 55

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-x}}{\sqrt{x}} + \frac{c_2 e^x}{2\sqrt{x}} + \frac{e^x \sqrt{x^3} (2x-1)}{4x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.405 (sec), leaf count = 31

$$\left\{ y(x) = \sinh(x) - C2 \frac{1}{\sqrt{x}} + \cosh(x) - C1 \frac{1}{\sqrt{x}} + \frac{e^x \sqrt{x^3}}{2x} \right\}$$

2.1277 ODE No. 1277

$$-(ax^2 + 1) y(x) + 4x^2 y''(x) + 4xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0264569 (sec), leaf count = 51

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-\frac{\sqrt{ax}}{2}}}{\sqrt{x}} + \frac{c_2 e^{\frac{\sqrt{ax}}{2}}}{\sqrt{a}\sqrt{x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.4 (sec), leaf count = 29

$$\left\{ y(x) = -C1 \sinh\left(\frac{x}{2}\sqrt{a}\right) \frac{1}{\sqrt{x}} + -C2 \cosh\left(\frac{x}{2}\sqrt{a}\right) \frac{1}{\sqrt{x}} \right\}$$

2.1278 ODE No. 1278

$$f(x)y(x) + 4x^2y''(x) + 4xy'(x) = 0$$

✗ **Mathematica** : cpu = 0.24499 (sec), leaf count = 0 , could not solve

DSolve[f[x]*y[x] + 4*x*Derivative[1][y][x] + 4*x^2*Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{f(x) - Y(x)}{4x^2} + \frac{\frac{d}{dx} - Y(x)}{x} + \frac{d^2}{dx^2} - Y(x) \right\}, \{ -Y(x) \} \right) \right\}$$

2.1279 ODE No. 1279

$$4x^2y''(x) + 5xy'(x) - y(x) - \log(x) = 0$$

✓ **Mathematica** : cpu = 0.15051 (sec), leaf count = 74

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{\frac{1}{2} \left(\frac{\sqrt{17}}{4} - \frac{1}{4} \right)} + c_2 x^{\frac{1}{2} \left(-\frac{1}{4} - \frac{\sqrt{17}}{4} \right)} - \frac{256(\log(x) + 1)}{(\sqrt{17} - 1)^2 (1 + \sqrt{17})^2} \right\} \right\}$$

✓ **Maple** : cpu = 1.144 (sec), leaf count = 32

$$\left\{ y(x) = x^{-\frac{1}{8} + \frac{\sqrt{17}}{8}} _C2 + x^{-\frac{1}{8} - \frac{\sqrt{17}}{8}} _C1 - \ln(x) - 1 \right\}$$

2.1280 ODE No. 1280

$$4x^2y''(x) - (4x^2 + 12x + 3)y(x) + 8xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0366193 (sec), leaf count = 52

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 e^{-x} (4e^{2x} x^2 \text{Ei}(-2x) + 2x - 1)}{2x^{3/2}} + c_1 e^x \sqrt{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.159 (sec), leaf count = 41

$$\left\{ y(x) = _C1 \sqrt{x} e^x + _C2 (4x^2 e^x \text{Ei}(1, 2x) - 2e^{-x} x + e^{-x}) x^{-\frac{3}{2}} \right\}$$

2.1281 ODE No. 1281

$$4x^2y''(x) + (4x^2 - 4x - 1)y(x) - 4(2x - 1)xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0197712 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^x}{\sqrt{x}} + c_2 e^x \sqrt{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.09 (sec), leaf count = 19

$$\left\{ y(x) = -C1 e^x \frac{1}{\sqrt{x}} + -C2 \sqrt{x} e^x \right\}$$

2.1282 ODE No. 1282

$$4x^3y'(x) + 4x^2y''(x) + (x^2 - 4)(x^2 + 6)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0224331 (sec), leaf count = 39

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-\frac{x^2}{4}}}{x^2} + \frac{1}{5} c_2 e^{-\frac{x^2}{4}} x^3 \right\} \right\}$$

✓ **Maple** : cpu = 0.086 (sec), leaf count = 27

$$\left\{ y(x) = \frac{-C1}{x^2} e^{-\frac{x^2}{4}} + -C2 x^3 e^{-\frac{x^2}{4}} \right\}$$

2.1283 ODE No. 1283

$$4x^2y''(x) + 4x^2 \log(x)y'(x) + y(x)(x^2 \log^2(x) + 2x - 8) - 4\sqrt{e^x x^{-x}} x^2 = 0$$

✓ **Mathematica** : cpu = 0.0904051 (sec), leaf count = 90

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{x/2} x^{-\frac{x}{2}-1} + \frac{1}{3} c_2 e^{x/2} x^{2-\frac{x}{2}} + \frac{1}{9} \left(3x^2 \sqrt{e^x x^{-x}} \log(x) - x^2 \sqrt{e^x x^{-x}} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.2 (sec), leaf count = 52

$$\left\{ y(x) = x^{-\frac{x}{2}-1} e^{\frac{x}{2}} -C2 + x^{-\frac{x}{2}+2} e^{\frac{x}{2}} -C1 + \frac{x^2(3 \ln(x) - 1)}{9} \sqrt{x^{-x} e^x} \right\}$$

2.1284 ODE No. 1284

$$(2x + 1)^2 y''(x) - 2(2x + 1)y'(x) - 12y(x) - 3x - 1 = 0$$

✓ **Mathematica** : cpu = 0.0416402 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow c_1(2x + 1)^3 + \frac{c_2}{2x + 1} + \frac{-72x^2 - 56x - 7}{192(2x + 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.022 (sec), leaf count = 42

$$\left\{ y(x) = \frac{-C1}{2x + 1} + (2x + 1)^3 - C2 - \frac{72x^2 + 56x + 7}{384x + 192} \right\}$$

2.1285 ODE No. 1285

$$((4a + 2)x - a)y'(x) + (a - 1)ay(x) + x(4x - 1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.314739 (sec), leaf count = 134

$$\left\{ \left\{ y(x) \rightarrow \frac{2c_1 \sqrt[4]{4x - 1} x^{\frac{1}{2} - \frac{a}{2}} e^{\sqrt{-(a-1)^2} \tan^{-1}(\sqrt{4x-1})}}{\sqrt[4]{1 - 4x}} - \frac{c_2 \sqrt[4]{4x - 1} x^{\frac{1}{2} - \frac{a}{2}} e^{-\sqrt{-(a-1)^2} \tan^{-1}(\sqrt{4x-1})}}{2\sqrt{-(a-1)^2} \sqrt[4]{1 - 4x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.146 (sec), leaf count = 52

$$\left\{ y(x) = -C1 {}_2F_1\left(\frac{a}{2}, \frac{a}{2} - \frac{1}{2}; a; 4x\right) + -C2 x^{1-a} {}_2F_1\left(1 - \frac{a}{2}, -\frac{a}{2} + \frac{1}{2}; -a + 2; 4x\right) \right\}$$

2.1286 ODE No. 1286

$$(3x - 1)^2 y''(x) + 3(3x - 1)y'(x) - 9y(x) - \log^2(3x - 1) = 0$$

✓ **Mathematica** : cpu = 0.0984604 (sec), leaf count = 101

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1((1 - 3x)^2 + 1)}{2(1 - 3x)} + \frac{ic_2((1 - 3x)^2 - 1)}{2(1 - 3x)} + \frac{-6x - 3x \log^2(3x - 1) + \log^2(3x - 1) + \log(3x - 1)}{9(3x - 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 32

$$\left\{ y(x) = \frac{-C1}{3x - 1} + (3x - 1) - C2 - \frac{(\ln(3x - 1))^2}{9} - \frac{2}{9} \right\}$$

2.1287 ODE No. 1287

$$9(x-1)xy''(x) + 3(2x-1)y'(x) - 20y(x) = 0$$

✓ **Mathematica** : cpu = 0.0186023 (sec), leaf count = 83

$$\left\{ \left\{ y(x) \rightarrow c_2 \sqrt[3]{1-x} \sqrt[3]{x} Q_1^{\frac{2}{3}}(2x-1) - \frac{c_1(2-2x)^{2/3} \sqrt[3]{1-xx^{2/3}}(6x-5)}{3 \cdot 2^{2/3}(x-1)\Gamma\left(\frac{4}{3}\right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 27

$$\left\{ y(x) = _C1 (6x-5)x^{\frac{2}{3}} + _C2 (6x-1)(x-1)^{\frac{2}{3}} \right\}$$

2.1288 ODE No. 1288

$$16x^2y''(x) + (4x+3)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0357403 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{i\sqrt{x}} \sqrt[4]{x} + ic_2 e^{-i\sqrt{x}} \sqrt[4]{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 23

$$\left\{ y(x) = _C1 \sin(\sqrt{x}) \sqrt[4]{x} + _C2 \sqrt[4]{x} \cos(\sqrt{x}) \right\}$$

2.1289 ODE No. 1289

$$16x^2y''(x) + 32xy'(x) - (4x+5)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0777308 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 e^{-\sqrt{x}}(\sqrt{x}+1)}{x^{5/4}} - \frac{c_1 e^{\sqrt{x}}(\sqrt{x}-1)}{x^{5/4}} \right\} \right\}$$

✓ **Maple** : cpu = 0.154 (sec), leaf count = 35

$$\left\{ y(x) = _C1 e^{\sqrt{x}}(\sqrt{x}-1)x^{-\frac{5}{4}} + _C2 e^{-\sqrt{x}}(\sqrt{x}+1)x^{-\frac{5}{4}} \right\}$$

2.1290 ODE No. 1290

$$(27x^2 + 4)y''(x) + 27xy'(x) - 3y(x) = 0$$

✓ **Mathematica** : cpu = 0.16246 (sec), leaf count = 103

$$\left\{ \left\{ y(x) \rightarrow c_1 \cosh \left(\frac{\sqrt{-27x^2 - 4} \tan^{-1} \left(\frac{3x}{\sqrt{-9x^2 - \frac{4}{3}}} \right)}{3\sqrt{27x^2 + 4}} \right) + ic_2 \sinh \left(\frac{\sqrt{-27x^2 - 4} \tan^{-1} \left(\frac{3x}{\sqrt{-9x^2 - \frac{4}{3}}} \right)}{3\sqrt{27x^2 + 4}} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 47

$$\left\{ y(x) = -C1 \sin \left(\frac{1}{3} \arctan \left(3 \frac{\sqrt{3}x}{\sqrt{-27x^2 - 4}} \right) \right) + -C2 \cos \left(\frac{1}{3} \arctan \left(3 \frac{\sqrt{3}x}{\sqrt{-27x^2 - 4}} \right) \right) \right\}$$

2.1291 ODE No. 1291

$$48(x - 1)xy''(x) + (152x - 40)y'(x) + 53y(x) = 0$$

✓ **Mathematica** : cpu = 0.0696224 (sec), leaf count = 92

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_2F_1 \left(\frac{13}{12} - \frac{\sqrt{5}}{6}, \frac{13}{12} + \frac{\sqrt{5}}{6}; \frac{5}{6}; x \right) + \sqrt[6]{-1} c_2 \sqrt[6]{x} {}_2F_1 \left(\frac{5}{4} - \frac{\sqrt{5}}{6}, \frac{5}{4} + \frac{\sqrt{5}}{6}; \frac{7}{6}; x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.072 (sec), leaf count = 62

$$\left\{ y(x) = -C1 {}_2F_1 \left(\frac{13}{12} - \frac{\sqrt{2}\sqrt{5}}{12}, \frac{13}{12} + \frac{\sqrt{2}\sqrt{5}}{12}; \frac{5}{6}; x \right) + -C2 \sqrt[6]{x} {}_2F_1 \left(\frac{5}{4} - \frac{\sqrt{2}\sqrt{5}}{12}, \frac{5}{4} + \frac{\sqrt{2}\sqrt{5}}{12}; \frac{7}{6}; x \right) \right\}$$

2.1292 ODE No. 1292

$$50(x-1)xy''(x) + 25(2x-1)y'(x) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0390016 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow c_1 \cosh \left(\frac{2}{5} \log(\sqrt{x-1} + \sqrt{x}) \right) + ic_2 \sinh \left(\frac{2}{5} \log(\sqrt{x-1} + \sqrt{x}) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.097 (sec), leaf count = 31

$$\left\{ y(x) = _C1 (\sqrt{x} + \sqrt{x-1})^{\frac{2}{5}} + _C2 (\sqrt{x} + \sqrt{x-1})^{-\frac{2}{5}} \right\}$$

2.1293 ODE No. 1293

$$144(x-1)xy''(x) + (120x-48)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.317578 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow (-1)^{2/3} c_2 x^{2/3} {}_2F_1 \left(\frac{7}{12}, \frac{7}{12}; \frac{5}{3}; x \right) + c_1 {}_2F_1 \left(-\frac{1}{12}, -\frac{1}{12}; \frac{1}{3}; x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.072 (sec), leaf count = 35

$$\left\{ y(x) = _C1 \sqrt[3]{x} \text{LegendreP} \left(-\frac{1}{2}, \frac{2}{3}, \sqrt{1-x} \right) + _C2 \sqrt[3]{x} \text{LegendreQ} \left(-\frac{1}{2}, \frac{2}{3}, \sqrt{1-x} \right) \right\}$$

2.1294 ODE No. 1294

$$144(x-1)xy''(x) + (168x-96)y'(x) + y(x) = 0$$

✓ **Mathematica** : cpu = 0.0624622 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_2F_1 \left(\frac{1}{12}, \frac{1}{12}; \frac{2}{3}; x \right) + \sqrt[3]{-1} c_2 \sqrt[3]{x} {}_2F_1 \left(\frac{5}{12}, \frac{5}{12}; \frac{4}{3}; x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.07 (sec), leaf count = 35

$$\left\{ y(x) = _C1 \sqrt[6]{x} \text{LegendreP} \left(-\frac{1}{2}, \frac{1}{3}, \sqrt{1-x} \right) + _C2 \sqrt[6]{x} \text{LegendreQ} \left(-\frac{1}{2}, \frac{1}{3}, \sqrt{1-x} \right) \right\}$$

2.1295 ODE No. 1295

$$ax^2y''(x) + bxy'(x) + y(x)(cx^2 + dx + f) = 0$$

✓ **Mathematica** : cpu = 0.275736 (sec), leaf count = 310

$$\left\{ \left\{ y(x) \rightarrow c_1 U \left(-\frac{-\sqrt{ca} - id\sqrt{a} - \sqrt{c}\sqrt{a^2 - 2ba - 4fa + b^2}}{2a\sqrt{c}}, \frac{\sqrt{a^2 - 2ba - 4fa + b^2}}{a} + 1, \frac{2i\sqrt{cx}}{\sqrt{a}} \right) \exp \left(\right. \right.$$

✓ **Maple** : cpu = 0.522 (sec), leaf count = 113

$$\left\{ y(x) = -C1 x^{-\frac{b}{2a}} M_{-\frac{i}{2}d\frac{1}{\sqrt{a}}\frac{1}{\sqrt{c}}, \frac{1}{2a}\sqrt{a^2+(-2b-4f)a+b^2}} \left(2ix\sqrt{c}\frac{1}{\sqrt{a}} \right) + -C2 x^{-\frac{b}{2a}} W_{-\frac{i}{2}d\frac{1}{\sqrt{a}}\frac{1}{\sqrt{c}}, \frac{1}{2a}\sqrt{a^2+(-2b-4f)a+b^2}} \right.$$

2.1296 ODE No. 1296

$$y(x)(a0x^2 + b0x + c0) + (a1x^2 + b1x)y'(x) + a2x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.535801 (sec), leaf count = 356

$$\left\{ \left\{ y(x) \rightarrow c_1 U \left(-\frac{2b0a2 - \sqrt{a1^2 - 4a0a2}a2 - a1b1 - \sqrt{a1^2 - 4a0a2}\sqrt{a2^2 - 2b1a2 - 4c0a2 + b1^2}}{2a2\sqrt{a1^2 - 4a0a2}}, \frac{\sqrt{a2^2 - 2b1a2 - 4c0a2 + b1^2}}{\sqrt{a2}} \right) \right. \right.$$

✓ **Maple** : cpu = 0.49 (sec), leaf count = 165

$$\left\{ y(x) = -C1 x^{-\frac{b1}{2a2}} e^{-\frac{a1x}{2a2}} M_{-\frac{a1b1-2a2b0}{2a2}\frac{1}{\sqrt{-4a0a2+a1^2}}, \frac{1}{2a2}\sqrt{a2^2+(-2b1-4c0)a2+b1^2}} \left(\frac{x}{a2}\sqrt{-4a0a2+a1^2} \right) + -C2 x^{-\frac{b1}{2a2}} e^{-\frac{a1x}{2a2}} W_{-\frac{a1b1-2a2b0}{2a2}\frac{1}{\sqrt{-4a0a2+a1^2}}, \frac{1}{2a2}\sqrt{a2^2+(-2b1-4c0)a2+b1^2}} \left(\frac{x}{a2}\sqrt{-4a0a2+a1^2} \right) \right.$$

2.1297 ODE No. 1297

$$(ax^2 + 1)y''(x) + axy'(x) + by(x) = 0$$

✓ **Mathematica** : cpu = 0.0331507 (sec), leaf count = 52

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin \left(\frac{\sqrt{b} \sinh^{-1}(\sqrt{ax})}{\sqrt{a}} \right) + c_1 \cos \left(\frac{\sqrt{b} \sinh^{-1}(\sqrt{ax})}{\sqrt{a}} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 61

$$\left\{ y(x) = _C1 \left(\sqrt{ax} + \sqrt{ax^2 + 1} \right)^{i\sqrt{b}\frac{1}{\sqrt{a}}} + _C2 \left(\left(\sqrt{ax} + \sqrt{ax^2 + 1} \right)^{i\sqrt{b}\frac{1}{\sqrt{a}}} \right)^{-1} \right\}$$

2.1298 ODE No. 1298

$$(ax^2 + 1) y''(x) + bxy'(x) + cy(x) = 0$$

✓ **Mathematica** : cpu = 0.0771942 (sec), leaf count = 162

$$\left\{ \left\{ y(x) \rightarrow c_1 (ax^2 + 1)^{\frac{2a-b}{4a}} P_{\frac{b-2a}{2a}}^{\frac{b-2a}{2a}} \left(\frac{i\sqrt{ax}}{\sqrt{a^2 - 2ba - 4ca + b^2 - a}} \right) + c_2 (ax^2 + 1)^{\frac{2a-b}{4a}} Q_{\frac{b-2a}{2a}}^{\frac{b-2a}{2a}} \left(\frac{i\sqrt{ax}}{\sqrt{a^2 - 2ba - 4ca + b^2 - a}} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.184 (sec), leaf count = 143

$$\left\{ y(x) = _C1 (ax^2 + 1)^{\frac{2a-b}{4a}} \text{LegendreP} \left(\frac{1}{2a} \left(\sqrt{a^2 + (-2b - 4c)a + b^2} - a \right), \frac{2a-b}{2a}, \sqrt{-ax} \right) + _C2 (ax^2 + 1)^{\frac{2a-b}{4a}} \text{LegendreQ} \left(\frac{1}{2a} \left(\sqrt{a^2 + (-2b - 4c)a + b^2} - a \right), \frac{2a-b}{2a}, \sqrt{-ax} \right) \right\}$$

2.1299 ODE No. 1299

$$(a^2x^2 - 1) y''(x) + 2a^2xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.013608 (sec), leaf count = 19

$$\left\{ \left\{ y(x) \rightarrow c_2 - \frac{c_1 \tanh^{-1}(ax)}{a} \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 31

$$\left\{ y(x) = _C1 + \left(\frac{\ln(ax - 1)}{2a} - \frac{\ln(ax + 1)}{2a} \right) _C2 \right\}$$

2.1300 ODE No. 1300

$$(a^2x^2 - 1)y''(x) + 2a^2xy'(x) - 2a^2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0154523 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow ac_1x + c_2 \left(ax \left(\frac{1}{2} \log(ax + 1) - \frac{1}{2} \log(1 - ax) \right) - 1 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.059 (sec), leaf count = 32

$$\left\{ y(x) = _C1 x + _C2 \left(\frac{a \ln(ax - 1)x}{2} - \frac{a \ln(ax + 1)x}{2} + 1 \right) \right\}$$

2.1301 ODE No. 1301

$$(ax^2 + bx)y''(x) - 2ay(x) + 2by'(x) = 0$$

✓ **Mathematica** : cpu = 0.031201 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2(ax + b)^3}{3ax} + \frac{c_1}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.041 (sec), leaf count = 22

$$\left\{ y(x) = \frac{_C1}{x} + \frac{_C2(ax + b)^3}{x} \right\}$$

2.1302 ODE No. 1302

$$A0y(x)(ax + b) + A1(ax + b)y'(x) + A2(ax + b)^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0815031 (sec), leaf count = 243

$$\left\{ \left\{ y(x) \rightarrow c_1 \left(\frac{2b}{a} + 2x \right)^{\frac{A1}{2aA2}} (2aA2x + 2A2b)^{-\frac{A1}{2aA2}} \left(-\frac{A0(\frac{b}{a} + x)}{aA2} \right)^{\frac{1}{2} - \frac{A1}{2aA2}} I_{\frac{A1}{aA2} - 1} \left(2\sqrt{-\frac{A0(\frac{b}{a} + x)}{aA2}} \right) + \right. \right.$$

✓ **Maple** : cpu = 0.071 (sec), leaf count = 117

$$\left\{ y(x) = _C1 (ax + b)^{-\frac{aA2 + A1}{2aA2}} J_{\frac{aA2 - A1}{aA2}} \left(2\sqrt{A0} \sqrt{\frac{ax + b}{a^2 A2}} \right) + _C2 (ax + b)^{-\frac{aA2 + A1}{2aA2}} Y_{\frac{aA2 - A1}{aA2}} \left(2\sqrt{A0} \sqrt{\frac{ax + b}{a^2 A2}} \right) \right\}$$

2.1303 ODE No. 1303

$$y''(x)(ax^2 + bx + c) + (dx + f)y'(x) + gy(x) = 0$$

✗ **Mathematica** : cpu = 14.2569 (sec), leaf count = 0 , DifferentialRoot result

$$\{\{y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{gy(x) + (dx + f)y'(x) + (ax^2 + bx + c)y''(x) = 0, y(0) = c_1, y'(0) = \dots\})\}$$

✓ **Maple** : cpu = 0.214 (sec), leaf count = 501

$$\left\{ y(x) = {}_2F_1\left(\frac{1}{2a} \left(-a + d + \sqrt{a^2 + (-2d - 4g)a + d^2}\right), -\frac{1}{2a} \left(a - d + \sqrt{a^2 + (-2d - 4g)a + d^2}\right)\right) \right\}$$

2.1304 ODE No. 1304

$$x^3y''(x) + xy'(x) - (2x + 3)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0323891 (sec), leaf count = 50

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 \left(e^{\frac{1}{x}} \text{Ei}\left(-\frac{1}{x}\right) + 2x^3 - x^2 + x \right) + c_1 e^{\frac{1}{x}}}{6x} \right\} \right\}$$

✓ **Maple** : cpu = 0.443 (sec), leaf count = 41

$$\left\{ y(x) = \frac{-C1 e^{x^{-1}}}{x} + \frac{-C2 \left(-2x^3 + e^{x^{-1}} \text{Ei}(1, x^{-1}) + x^2 - x \right)}{x} \right\}$$

2.1305 ODE No. 1305

$$x^3y''(x) + 2xy'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.0640134 (sec), leaf count = 47

$$\left\{ \left\{ y(x) \rightarrow c_2 G_{1,2}^{2,0} \left(-\frac{2}{x} \middle| \begin{matrix} \frac{1}{2} \\ -1, 0 \end{matrix} \right) + c_1 e^{\frac{1}{x}} \left(I_0 \left(\frac{1}{x} \right) - I_1 \left(\frac{1}{x} \right) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.288 (sec), leaf count = 47

$$\left\{ y(x) = -C1 e^{x^{-1}} (I_0(x^{-1}) - I_1(x^{-1})) + -C2 e^{x^{-1}} (K_0(-x^{-1}) - K_1(-x^{-1})) \right\}$$

2.1306 ODE No. 1306

$$y(x) (ax^2 + a + bx) + x^3 y''(x) + x^2 y'(x) = 0$$

✗ **Mathematica** : cpu = 0.989962 (sec), leaf count = 0 , DifferentialRoot result

$$\{ \{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{y''(x)x^3 + y'(x)x^2 + (ax^2 + bx + a)y(x) = 0, y(1) = c_1, y'(1) = c_2\}) \}$$

✓ **Maple** : cpu = 0.612 (sec), leaf count = 95

$$\left\{ y(x) = _C1 \text{HeunD}\left(0, 8a + 4b, 0, 8a - 4b, \frac{1+x}{x-1}\right) + _C2 \text{HeunD}\left(0, 8a + 4b, 0, 8a - 4b, \frac{1+x}{x-1}\right) \int \right.$$

2.1307 ODE No. 1307

$$x^3 y''(x) + (x+1)xy'(x) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0838797 (sec), leaf count = 54

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{\frac{1}{x}}(x+1)}{x} - \frac{c_2 \left(e^{\frac{1}{x}} x \text{Ei}\left(-\frac{1}{x}\right) + e^{\frac{1}{x}} \text{Ei}\left(-\frac{1}{x}\right) + x \right)}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.056 (sec), leaf count = 39

$$\left\{ y(x) = \frac{_C1 e^{x^{-1}}(1+x)}{x} + \frac{_C2 \left(e^{x^{-1}}(1+x) \text{Ei}(1, x^{-1}) - x \right)}{x} \right\}$$

2.1308 ODE No. 1308

$$x^3 y''(x) - x^2 y'(x) + xy(x) - \log^3(x) = 0$$

✓ **Mathematica** : cpu = 0.0206537 (sec), leaf count = 41

$$\left\{ \left\{ y(x) \rightarrow c_1 x + c_2 x \log(x) + \frac{2 \log^3(x) + 6 \log^2(x) + 9 \log(x) + 6}{8x} \right\} \right\}$$

✓ **Maple** : cpu = 0.02 (sec), leaf count = 36

$$\left\{ y(x) = x _C2 + x \ln(x) _C1 + \frac{2 (\ln(x))^3 + 6 (\ln(x))^2 + 9 \ln(x) + 6}{8x} \right\}$$

2.1309 ODE No. 1309

$$x^3 y''(x) - (x^2 - 1) y'(x) + xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0742661 (sec), leaf count = 84

$$\left\{ \left\{ y(x) \rightarrow c_2 G_{1,2}^{2,0} \left(-\frac{1}{2x^2} \middle| \begin{matrix} 1 \\ -\frac{1}{2}, -\frac{1}{2} \end{matrix} \right) + \sqrt{2} c_1 e^{\frac{1}{4x^2}} x \left(\left(1 - \frac{1}{2x^2} \right) I_0 \left(\frac{1}{4x^2} \right) + \frac{I_1 \left(\frac{1}{4x^2} \right)}{2x^2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.109 (sec), leaf count = 73

$$\left\{ y(x) = \frac{C1}{x} e^{\frac{1}{4x^2}} \left((2x^2 - 1) I_0 \left(\frac{1}{4x^2} \right) + I_1 \left(\frac{1}{4x^2} \right) \right) + \frac{C2}{x} e^{\frac{1}{4x^2}} \left((2x^2 - 1) K_0 \left(-\frac{1}{4x^2} \right) + K_1 \left(-\frac{1}{4x^2} \right) \right) \right\}$$

2.1310 ODE No. 1310

$$x^3 y''(x) + 3x^2 y'(x) + xy(x) - 1 = 0$$

✓ **Mathematica** : cpu = 0.0115911 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{x} + \frac{c_2 \log(x)}{x} + \frac{\log^2(x)}{2x} \right\} \right\}$$

✓ **Maple** : cpu = 0.011 (sec), leaf count = 20

$$\left\{ y(x) = \frac{1}{x} \left(\frac{(\ln(x))^2}{2} + _C1 \ln(x) + _C2 \right) \right\}$$

2.1311 ODE No. 1311

$$-v(v+1)xy(x) + x(x^2+1)y''(x) + (2x^2+1)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.127172 (sec), leaf count = 63

$$\left\{ \left\{ y(x) \rightarrow c_2 G_{2,2}^{2,0} \left(-x^2 \middle| \begin{matrix} \frac{1-v}{2}, \frac{v+2}{2} \\ 0, 0 \end{matrix} \right) + c_1 {}_2F_1 \left(\frac{v}{2} + \frac{1}{2}, -\frac{v}{2}; 1; -x^2 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.203 (sec), leaf count = 52

$$\left\{ y(x) = _C1 {}_2F_1 \left(-\frac{v}{2}, \frac{1}{2} + \frac{v}{2}; \frac{1}{2}; x^2 + 1 \right) + _C2 \sqrt{x^2 + 1} {}_2F_1 \left(1 + \frac{v}{2}, \frac{1}{2} - \frac{v}{2}; \frac{3}{2}; x^2 + 1 \right) \right\}$$

2.1312 ODE No. 1312

$$x(x^2 + 1)y''(x) + 2(x^2 - 1)y'(x) - 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0236715 (sec), leaf count = 32

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{x^2 + 1} + \frac{c_2 x^3}{3(x^2 + 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 26

$$\left\{ y(x) = \frac{-C1}{x^2 + 1} + \frac{-C2 x^3}{x^2 + 1} \right\}$$

2.1313 ODE No. 1313

$$x(-(v - n))(n + v + 1)y(x) + (2(n + 1)x^2 + 2n + 1)y'(x) + x(x^2 + 1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.200394 (sec), leaf count = 87

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_2F_1\left(\frac{n}{2} - \frac{v}{2}, \frac{n}{2} + \frac{v}{2} + \frac{1}{2}; n + 1; -x^2\right) + c_2 x^{-2n} {}_2F_1\left(-\frac{n}{2} - \frac{v}{2}, -\frac{n}{2} + \frac{v}{2} + \frac{1}{2}; 1 - n; -x^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.092 (sec), leaf count = 39

$$\left\{ y(x) = -C1 x^{-n} \text{LegendreP}\left(v, n, \sqrt{x^2 + 1}\right) + -C2 x^{-n} \text{LegendreQ}\left(v, n, \sqrt{x^2 + 1}\right) \right\}$$

2.1314 ODE No. 1314

$$x(n - v - 1)(n + v)y(x) - (2(n - 1)x^2 + 2n - 1)y'(x) + x(x^2 + 1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.177807 (sec), leaf count = 87

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_2F_1\left(-\frac{n}{2} - \frac{v}{2}, -\frac{n}{2} + \frac{v}{2} + \frac{1}{2}; 1 - n; -x^2\right) + c_2 x^{2n} {}_2F_1\left(\frac{n}{2} - \frac{v}{2}, \frac{n}{2} + \frac{v}{2} + \frac{1}{2}; n + 1; -x^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.081 (sec), leaf count = 35

$$\left\{ y(x) = -C1 x^n \text{LegendreP}\left(v, n, \sqrt{x^2 + 1}\right) + -C2 x^n \text{LegendreQ}\left(v, n, \sqrt{x^2 + 1}\right) \right\}$$

2.1315 ODE No. 1315

$$ax^3y(x) + (x^2 - 1)xy''(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0267622 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin \left(\sqrt{a} \sqrt{x^2 - 1} \right) + c_1 \cos \left(\sqrt{a} \sqrt{x^2 - 1} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.022 (sec), leaf count = 45

$$\left\{ y(x) = _C1 \sin \left((1+x)(x-1) \sqrt{a} \frac{1}{\sqrt{x^2-1}} \right) + _C2 \cos \left((1+x)(x-1) \sqrt{a} \frac{1}{\sqrt{x^2-1}} \right) \right\}$$

2.1316 ODE No. 1316

$$x(x^2 - 1)y''(x) + (x^2 - 1)y'(x) - xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0885428 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow c_2 G_{2,2}^{2,0} \left(x^2 \middle| \begin{matrix} \frac{1}{2}, \frac{3}{2} \\ 0, 0 \end{matrix} \right) + \frac{2c_1 E(x^2)}{\pi} \right\} \right\}$$

✓ **Maple** : cpu = 0.039 (sec), leaf count = 18

$$\{y(x) = _C1 \text{EllipticE}(x) + _C2 (\text{EllipticCE}(x) - \text{EllipticCK}(x))\}$$

2.1317 ODE No. 1317

$$x(x^2 - 1)y''(x) + (3x^2 - 1)y'(x) + xy(x) = 0$$

✓ **Mathematica** : cpu = 0.120342 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow c_2 G_{2,2}^{2,0} \left(x^2 \middle| \begin{matrix} \frac{1}{2}, \frac{1}{2} \\ 0, 0 \end{matrix} \right) + \frac{2c_1 K(x^2)}{\pi} \right\} \right\}$$

✓ **Maple** : cpu = 0.039 (sec), leaf count = 13

$$\{y(x) = _C1 \text{EllipticK}(x) + _C2 \text{EllipticCK}(x)\}$$

2.1318 ODE No. 1318

$$(ax^2 + b)y'(x) + cxy(x) + x(x^2 - 1)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.28029 (sec), leaf count = 172

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_2F_1\left(\frac{a}{4} - \frac{1}{4}\sqrt{a^2 - 2a - 4c + 1} - \frac{1}{4}, \frac{a}{4} + \frac{1}{4}\sqrt{a^2 - 2a - 4c + 1} - \frac{1}{4}; \frac{1}{2} - \frac{b}{2}; x^2\right) + i^{b+1}c_2x^{b+1}, \right. \right.$$

✓ **Maple** : cpu = 0.141 (sec), leaf count = 122

$$\left. \left\{ y(x) = _C1 {}_2F_1\left(-\frac{1}{4} + \frac{a}{4} + \frac{1}{4}\sqrt{a^2 - 2a - 4c + 1}, -\frac{1}{4} + \frac{a}{4} - \frac{1}{4}\sqrt{a^2 - 2a - 4c + 1}; -\frac{b}{2} + \frac{1}{2}; x^2\right) + _C2x^{b+1} \right. \right.$$

2.1319 ODE No. 1319

$$x(x^2 + 2)y''(x) - y'(x) - 6xy(x) = 0$$

✓ **Mathematica** : cpu = 0.0957891 (sec), leaf count = 118

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 \left(-2\sqrt[4]{2}x^2 {}_2F_1\left(\frac{1}{4}, \frac{3}{4}, \frac{5}{4}; -\frac{x^2}{2}\right) - \sqrt[4]{2}x^4 {}_2F_1\left(\frac{1}{4}, \frac{3}{4}, \frac{5}{4}; -\frac{x^2}{2}\right) - \sqrt{x^2 + 2}x^2 - \sqrt[4]{x^2 + 2} \right)}{3\sqrt[4]{x^2 + 2}} + c_1(x^2 + 2) \right. \right.$$

✓ **Maple** : cpu = 0.226 (sec), leaf count = 37

$$\left. \left\{ y(x) = _C1 (x^2 + 2)^{\frac{3}{4}} x^{\frac{3}{2}} + _C2 (x^2 + 2)^{\frac{3}{4}} {}_2F_1\left(-\frac{3}{4}, \frac{7}{4}; \frac{1}{4}; -\frac{x^2}{2}\right) \right. \right.$$

2.1320 ODE No. 1320

$$x(x^2 - 2)y''(x) + (x^2 + 4x + 2)y(x) - (x^3 + 3x^2 - 2x - 2)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0656764 (sec), leaf count = 21

$$\left\{ \left\{ y(x) \rightarrow c_1 e^x x^2 + c_2 (x - 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 17

$$\left\{ y(x) = _C1 (x - 1) + _C2 e^x x^2 \right\}$$

2.1321 ODE No. 1321

$$(x+1)x^2y''(x) - (2x+1)xy'(x) + (2x+1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0260429 (sec), leaf count = 18

$$\{\{y(x) \rightarrow c_1x + c_2x(x + \log(x))\}\}$$

✓ **Maple** : cpu = 0.031 (sec), leaf count = 15

$$\{y(x) = _C1 x + _C2 x(x + \ln(x))\}$$

2.1322 ODE No. 1322

$$(x+1)x^2y''(x) + 2(3x+2)xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0311687 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow c_1 \left(-\frac{1}{3x^3} + \frac{1}{x^2} - \frac{3}{x} - \frac{1}{x+1} - 4\log(x) + 4\log(x+1) \right) + c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 44

$$\left\{ y(x) = _C1 + \left(-4 \ln(x) + 4 \ln(1+x) - \frac{12x^3 + 6x^2 - 2x + 1}{3x^3(1+x)} \right) _C2 \right\}$$

2.1323 ODE No. 1323

$$y''(x) = \frac{2(x+1)y(x)}{(x-1)x} - \frac{2(x-2)y'(x)}{(x-1)x}$$

✗ **Mathematica** : cpu = 0.732194 (sec), leaf count = 0 , DifferentialRoot result

$$\{\{y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{(-2x-2)y(x) + (2x-4)y'(x) + (x-1)xy''(x) = 0, y(2) = c_1, y'(2) = c_2\})\}\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 20

$$\left\{ y(x) = \frac{C1}{x^2} + \frac{C2(x-1)^3}{x^2} \right\}$$

2.1324 ODE No. 1324

$$y''(x) = \frac{(5x-4)y'(x)}{(x-1)x} - \frac{(9x-6)y(x)}{(x-1)x^2}$$

✓ **Mathematica** : cpu = 0.0291326 (sec), leaf count = 25

$$\{ \{ y(x) \rightarrow c_1 x^3 - c_2 x^2 (x \log(x) + 1) \} \}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 21

$$\{ y(x) = _C1 x^3 + _C2 x^2 (x \ln(x) + 1) \}$$

2.1325 ODE No. 1325

$$y''(x) = -\frac{y(x)(abx - \alpha\beta)}{(x-1)x^2} - \frac{y'(x)(x(a+b+1) + \alpha + \beta - 1)}{(x-1)x}$$

✓ **Mathematica** : cpu = 0.257105 (sec), leaf count = 52

$$\{ \{ y(x) \rightarrow (-1)^\alpha c_1 x^\alpha {}_2F_1(a + \alpha, \alpha + b; \alpha - \beta + 1; x) + (-1)^\beta c_2 x^\beta {}_2F_1(a + \beta, b + \beta; -\alpha + \beta + 1; x) \} \}$$

✓ **Maple** : cpu = 0.147 (sec), leaf count = 103

$$\{ y(x) = _C1 (x-1)^{1-a-\alpha-b-\beta} x^\alpha {}_2F_1(1-b-\beta, 1-a-\beta; 1+\alpha-\beta; x) + _C2 (x-1)^{1-a-\alpha-b-\beta} x^\beta {}_2F_1(a+\beta, b+\beta; -\alpha+\beta+1; x) \}$$

2.1326 ODE No. 1326

$$y''(x) = -\frac{y'(x)}{x+1} - \frac{y(x)}{x(x+1)^2}$$

✓ **Mathematica** : cpu = 0.0249236 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 x}{x+1} + \frac{c_2 (x \log(x) - 1)}{x+1} \right\} \right\}$$

✓ **Maple** : cpu = 0.03 (sec), leaf count = 26

$$\left\{ y(x) = \frac{_C1 x}{1+x} + \frac{_C2 (x \ln(x) - 1)}{1+x} \right\}$$

2.1327 ODE No. 1327

$$y''(x) = \frac{2y'(x)}{(x-2)x} - \frac{y(x)}{(x-2)x^2}$$

✓ **Mathematica** : cpu = 0.161845 (sec), leaf count = 104

$$\left\{ \left\{ y(x) \rightarrow \left(-\frac{1}{2}\right)^{-\frac{1}{\sqrt{2}}} c_1 x^{-\frac{1}{\sqrt{2}}} {}_2F_1\left(-\frac{1}{\sqrt{2}}, -1 - \frac{1}{\sqrt{2}}; 1 - \sqrt{2}; \frac{x}{2}\right) + \left(-\frac{1}{2}\right)^{\frac{1}{\sqrt{2}}} c_2 x^{\frac{1}{\sqrt{2}}} {}_2F_1\left(\frac{1}{\sqrt{2}}, -1 + \frac{1}{\sqrt{2}}; 1 + \sqrt{2}; \frac{x}{2}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.124 (sec), leaf count = 85

$$\left\{ y(x) = -C1 {}_2F_1\left(2 - \frac{\sqrt{2}}{2}, 1 - \frac{\sqrt{2}}{2}; 1 - \sqrt{2}; \frac{x}{2}\right)(x-2)^2 x^{-\frac{\sqrt{2}}{2}} + -C2 {}_2F_1\left(2 + \frac{\sqrt{2}}{2}, 1 + \frac{\sqrt{2}}{2}; 1 + \sqrt{2}; \frac{x}{2}\right)(x-2)^2 x^{\frac{\sqrt{2}}{2}} \right\}$$

2.1328 ODE No. 1328

$$y''(x) = \frac{2y(x)}{(x-1)^2 x}$$

✓ **Mathematica** : cpu = 0.0224098 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2(-x^2 + 2x \log(x) + 1)}{x-1} - \frac{c_1 x}{x-1} \right\} \right\}$$

✓ **Maple** : cpu = 0.031 (sec), leaf count = 32

$$\left\{ y(x) = \frac{C1 x}{x-1} + \frac{C2 (2x \ln(x) - x^2 + 1)}{x-1} \right\}$$

2.1329 ODE No. 1329

$$y''(x) = -\frac{y'(x)(-x(a(\delta + \text{gamma1}) + \alpha + \beta - \delta + 1) + a\text{gamma1} + x^2(\alpha + \beta + 1))}{(x-1)x(x-a)} - \frac{y(x)(\alpha\beta x - q)}{(x-1)x(x-a)}$$

✗ **Mathematica** : cpu = 6.5589 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{(x\alpha\beta - q)y(x) + (\alpha x^2 + \beta x^2 + x^2 - \alpha x - \beta x - a\delta x + \delta x - a\text{gamma1})y'(x)\}) \right\} \right\}$$

✓ **Maple** : cpu = 0.395 (sec), leaf count = 64

$$\{y(x) = _C1 HeunG(a, q, \alpha, \beta, \gamma1, \delta, x) + _C2 x^{1-\gamma1} HeunG(a, q - (-1 + \gamma1) (\delta (a - 1) + \alpha + \beta - \gamma1 +$$

2.1330 ODE No. 1330

$$y''(x) = -\frac{y'(x)(Ax^2 + Bx + C)}{(x-a)(x-b)(x-c)} - \frac{(DDx + e)y(x)}{(x-a)(x-b)(x-c)}$$

✗ **Mathematica** : cpu = 151.615 (sec), leaf count = 0 , DifferentialRoot result

$$\{\{y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{(xDD + e)y(x) + (Ax^2 + Bx + C) y'(x) - (a - x)(b - x)(c - x)y''(x)$$

✓ **Maple** : cpu = 1.209 (sec), leaf count = 1147

$$\{y(x) = _C1 HeunG\left(\frac{a-c}{a-b}, \frac{DDa + E}{a-b}, \frac{A}{2} - \frac{1}{2} + \frac{1}{2}\sqrt{A^2 - 2A - 4DD + 1}, 1\left((A(b-c)a - Abc - Bc -$$

2.1331 ODE No. 1331

$$y''(x) = \frac{(x-4)y'(x)}{2(x-2)x} - \frac{(x-3)y(x)}{2(x-2)x^2}$$

✓ **Mathematica** : cpu = 0.0435028 (sec), leaf count = 55

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 \sqrt[4]{x-2} \sqrt{x}}{\sqrt[4]{2-x}} + \frac{2c_2 (x-2)^{3/4} \sqrt{x}}{\sqrt[4]{2-x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 19

$$\{y(x) = _C1 \sqrt{x} + _C2 \sqrt{x(x-2)}\}$$

2.1332 ODE No. 1332

$$y''(x) = \frac{y'(x)}{x+1} - \frac{(3x+1)y(x)}{4x^2(x+1)}$$

✓ **Mathematica** : cpu = 0.0243901 (sec), leaf count = 26

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{x} + c_2 \sqrt{x}(x + \log(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 19

$$\left\{ y(x) = _C1 \sqrt{x} + _C2 \sqrt{x}(x + \ln(x)) \right\}$$

2.1333 ODE No. 1333

$$y''(x) = \frac{v(v+1)y(x)}{4x^2} - \frac{(3x-1)y'(x)}{2(x-1)x}$$

✓ **Mathematica** : cpu = 0.108049 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow c_1 i^{-v} x^{-v/2} {}_2F_1\left(\frac{1}{2}, -v; \frac{1}{2} - v; x\right) + c_2 i^{v+1} x^{\frac{v+1}{2}} {}_2F_1\left(\frac{1}{2}, v+1; v + \frac{3}{2}; x\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.075 (sec), leaf count = 45

$$\left\{ y(x) = _C1 x^{-\frac{v}{2}} {}_2F_1\left(\frac{1}{2}, -v; \frac{1}{2} - v; x\right) + _C2 x^{\frac{v}{2} + \frac{1}{2}} {}_2F_1\left(\frac{1}{2}, v+1; \frac{3}{2} + v; x\right) \right\}$$

2.1334 ODE No. 1334

$$y''(x) = -\frac{y(x)(x(a^2 - b^2) + c^2)}{4(x-1)x^2} - \frac{((a+1)x-1)y'(x)}{(x-1)x}$$

✓ **Mathematica** : cpu = 0.193958 (sec), leaf count = 114

$$\left\{ \left\{ y(x) \rightarrow i^{-c} c_1 x^{-c/2} {}_2F_1\left(\frac{a}{2} - \frac{b}{2} - \frac{c}{2}, \frac{a}{2} + \frac{b}{2} - \frac{c}{2}; 1 - c; x\right) + i^c c_2 x^{c/2} {}_2F_1\left(\frac{a}{2} - \frac{b}{2} + \frac{c}{2}, \frac{a}{2} + \frac{b}{2} + \frac{c}{2}; c + 1; x\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.095 (sec), leaf count = 97

$$\left\{ y(x) = _C1 (x-1)^{1-a} x^{\frac{c}{2}} {}_2F_1\left(-\frac{a}{2} + \frac{b}{2} + \frac{c}{2} + 1, -\frac{a}{2} - \frac{b}{2} + \frac{c}{2} + 1; 1 + c; x\right) + _C2 (x-1)^{1-a} x^{-\frac{c}{2}} {}_2F_1\left(\frac{a}{2} - \frac{b}{2} + \frac{c}{2}, \frac{a}{2} + \frac{b}{2} + \frac{c}{2}; c + 1; x\right) \right\}$$

2.1335 ODE No. 1335

$$y''(x) = -\frac{y(x)(ax+b)}{4(x-1)^2x} - \frac{(3x-1)y'(x)}{2(x-1)x}$$

✓ **Mathematica** : cpu = 0.303971 (sec), leaf count = 893

$$\left\{ \left\{ y(x) \rightarrow e^{\frac{1}{4}(-2\log(1-x)-\log(x))} \sqrt[4]{x} c_1 {}_2F_1\left(\frac{1}{4}\left(\sqrt{-8a-4b-4\sqrt{4a^2+4ba-a-b}+1}+1\right), \frac{-8a-4b-4\sqrt{4a^2+4ba-a-b}+1}{4}\right) + c_2 \sqrt[4]{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.057 (sec), leaf count = 57

$$\{y(x) = _C1 \text{LegendreP}\left(\frac{1}{2}\sqrt{1-4a}-\frac{1}{2}, \sqrt{-a-b}, \sqrt{x}\right) + _C2 \text{LegendreQ}\left(\frac{1}{2}\sqrt{1-4a}-\frac{1}{2}, \sqrt{-a-b}, \sqrt{x}\right)\}$$

2.1336 ODE No. 1336

$$y''(x) = -\frac{(1-3x)y(x)}{(x-1)(2x-1)^2}$$

✓ **Mathematica** : cpu = 0.0516275 (sec), leaf count = 70

$$\{\{y(x) \rightarrow c_2\sqrt{1-2x}(2x\log(2(x-1)+1)-2\log(2(x-1)+1)-2x\log(x-1)+2\log(x-1)-1)-c_1\}$$

✓ **Maple** : cpu = 0.056 (sec), leaf count = 50

$$\{y(x) = _C1 \sqrt{2x-1}(x-1) + _C2 ((2x-2)\ln(2x-1)-1+(-2x+2)\ln(x-1))\sqrt{2x-1}\}$$

2.1337 ODE No. 1337

$$y''(x) = -\frac{(a+2b+3x)y'(x)}{2(a+x)(b+x)} - \frac{(a-b)y(x)}{4(a+x)^2(b+x)}$$

✓ **Mathematica** : cpu = 0.0819121 (sec), leaf count = 62

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{\sqrt{\frac{b+x}{a-b}+1}} + \frac{c_2\sqrt{b+x}}{\sqrt{a-b}\sqrt{\frac{b+x}{a-b}+1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.043 (sec), leaf count = 44

$$\left\{ y(x) = _C1 \sqrt{x+b} \frac{1}{\sqrt{1 + \frac{x+b}{a-b}}} + _C2 \frac{1}{\sqrt{1 + \frac{x+b}{a-b}}} \right\}$$

2.1338 ODE No. 1338

$$y''(x) = \frac{y(x)}{3(x-2)x^2} + \frac{(6x-1)y'(x)}{3(x-2)x}$$

✓ **Mathematica** : cpu = 0.0670709 (sec), leaf count = 40

$$\left\{ \left\{ y(x) \rightarrow \frac{3}{935} c_2 x (18x^2 - 102x + 187) + c_1 \sqrt[6]{x} (2-x)^{17/6} \right\} \right\}$$

✓ **Maple** : cpu = 0.039 (sec), leaf count = 31

$$\left\{ y(x) = _C1 (18x^3 - 102x^2 + 187x) + _C2 (x-2)^{\frac{17}{6}} \sqrt[6]{x} \right\}$$

2.1339 ODE No. 1339

$$y''(x) = -\frac{y'(x)(a(b+2)x^2 + x(c-d+1))}{x^2(ax+1)} - \frac{y(x)(abx-cd)}{x^2(ax+1)}$$

✓ **Mathematica** : cpu = 0.26087 (sec), leaf count = 66

$$\left\{ \left\{ y(x) \rightarrow c_1 a^{-c} x^{-c} {}_2F_1(1-c, b-c; -c-d+1; -ax) + c_2 a^d x^d {}_2F_1(d+1, b+d; c+d+1; -ax) \right\} \right\}$$

✓ **Maple** : cpu = 0.166 (sec), leaf count = 89

$$\left\{ y(x) = _C1 (ax+1)^{-b+c-d} x^d {}_2F_1(c, 1-b+c; 1+c+d; -ax) + _C2 (ax+1)^{-b+c-d} x^{-c} {}_2F_1(-d, 1-b+c-d; -d-c; -ax) \right\}$$

2.1340 ODE No. 1340

$$y''(x) = \frac{2(ax+2b)y'(x)}{x(ax+b)} - \frac{y(x)(2ax+6b)}{x^2(ax+b)}$$

✓ **Mathematica** : cpu = 0.0356712 (sec), leaf count = 32

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 x^3}{ax+b} + \frac{c_1 x^2}{ax+b} \right\} \right\}$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 29

$$\left\{ y(x) = \frac{-C1 x^2}{ax+b} + \frac{-C2 x^3}{ax+b} \right\}$$

2.1341 ODE No. 1341

$$y''(x) = -\frac{y(x)(avx-b)}{x^2(ax+b)} - \frac{(2ax+b)y'(x)}{x(ax+b)} + Ax$$

✗ **Mathematica** : cpu = 300. (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.197 (sec), leaf count = 195

$$\left\{ y(x) = {}_2F_1\left(-\frac{1}{2} - \frac{1}{2}\sqrt{1-4v}, \frac{3}{2} - \frac{1}{2}\sqrt{1-4v}; 1 - \sqrt{1-4v}; -\frac{b}{ax}\right) x^{-\frac{1}{2} + \frac{1}{2}\sqrt{1-4v}} - C2 + {}_2F_1\left(-\frac{1}{2} + \frac{1}{2}\sqrt{1-4v}, \frac{3}{2} + \frac{1}{2}\sqrt{1-4v}; 1 - \sqrt{1-4v}; -\frac{b}{ax}\right) x^{-\frac{1}{2} - \frac{1}{2}\sqrt{1-4v}} - C2 \right\}$$

2.1342 ODE No. 1342

$$y''(x) = -\frac{ay(x)}{x^4}$$

✓ **Mathematica** : cpu = 0.0422049 (sec), leaf count = 51

$$\left\{ \left\{ y(x) \rightarrow c_1 x e^{\frac{\sqrt{-a}}{x}} + \frac{c_2 x e^{-\frac{\sqrt{-a}}{x}}}{2\sqrt{-a}} \right\} \right\}$$

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

$$\left\{ y(x) = -C1 x \sinh\left(\frac{1}{x}\sqrt{-a}\right) + -C2 x \cosh\left(\frac{1}{x}\sqrt{-a}\right) \right\}$$

2.1343 ODE No. 1343

$$y''(x) = -\frac{y(x) ((1-a)ax^2 - b(b+x))}{x^4}$$

✗ **Mathematica** : cpu = 0.655982 (sec), leaf count = 0 , DifferentialRoot result

$$\{ \{y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{y''(x)x^4 + (-a^2x^2 + ax^2 - bx - b^2)y(x) = 0, y(1) = c_1, y'(1) = c_2\}) \}$$

✓ **Maple** : cpu = 0.161 (sec), leaf count = 62

$$\left\{ y(x) = _C1 \left((2ax + b) I_a \left(\frac{b}{x} \right) + I_{a+1} \left(\frac{b}{x} \right) b \right) + _C2 \left((2ax + b) K_a \left(\frac{b}{x} \right) - K_{a+1} \left(\frac{b}{x} \right) b \right) \right\}$$

2.1344 ODE No. 1344

$$y''(x) = -\frac{(e^{2/x} - v^2) y(x)}{x^4}$$

✓ **Mathematica** : cpu = 0.560795 (sec), leaf count = 173

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 2^{v+\frac{v+1}{2}} (e^{2/x})^{\frac{v+1}{2}-\frac{1}{2}} (-e^{2/x})^{\frac{1}{2}(-v-1)+\frac{1}{2}} I_v(\sqrt{-e^{2/x}})}{\log(e^{2/x})} + \frac{c_2 (-1)^{-v} 2^{v+\frac{v+1}{2}} (e^{2/x})^{\frac{v+1}{2}-\frac{1}{2}} (-e^{2/x})^{\frac{1}{2}(-v-1)+\frac{1}{2}} K_v(\sqrt{-e^{2/x}})}{\log(e^{2/x})} \right\} \right\}$$

✓ **Maple** : cpu = 0.199 (sec), leaf count = 23

$$\left\{ y(x) = _C1 x J_v(e^{x^{-1}}) + _C2 x Y_v(e^{x^{-1}}) \right\}$$

2.1345 ODE No. 1345

$$y''(x) = \frac{2y(x)}{x^4} - \frac{y'(x)}{x^3}$$

✓ **Mathematica** : cpu = 0.0298599 (sec), leaf count = 52

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{2x^2}} x - \sqrt{\frac{\pi}{2}} c_2 e^{\frac{1}{2x^2}} x \operatorname{erf}\left(\frac{1}{\sqrt{2x}}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.075 (sec), leaf count = 32

$$\left\{ y(x) = _C1 x e^{\frac{1}{2x^2}} + _C2 x e^{\frac{1}{2x^2}} \operatorname{Erf}\left(\frac{\sqrt{2}}{2x}\right) \right\}$$

2.1346 ODE No. 1346

$$y''(x) = \frac{(a+b)y'(x)}{x^2} - \frac{y(x)(x(a+b) + ab)}{x^4}$$

✓ **Mathematica** : cpu = 0.330141 (sec), leaf count = 87

$$\left\{ \left\{ y(x) \rightarrow c_1 x e^{-\frac{-\sqrt{(a-b)^2 + a + b}}{2x}} + \frac{c_2 x e^{-\frac{\sqrt{(a-b)^2 - \frac{a}{2x} - \frac{b}{2x}}}{2x}}}{\sqrt{(a-b)^2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.052 (sec), leaf count = 25

$$\left\{ y(x) = _C1 x e^{-\frac{a}{x}} + _C2 x e^{-\frac{b}{x}} \right\}$$

2.1347 ODE No. 1347

$$y''(x) = -\frac{y(x)}{x^4} - \frac{y'(x)}{x}$$

✓ **Mathematica** : cpu = 0.0780223 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow c_2 J_0\left(\frac{1}{x}\right) + \frac{c_1 K_0\left(\frac{i}{x}\right)}{\sqrt{\pi}} \right\} \right\}$$

✓ **Maple** : cpu = 0.03 (sec), leaf count = 19

$$\left\{ y(x) = _C1 J_0(x^{-1}) + _C2 Y_0(x^{-1}) \right\}$$

2.1348 ODE No. 1348

$$y''(x) = -\frac{y(x)(a(x^4+1)+bx^2)}{x^4} - \frac{y'(x)}{x}$$

✗ **Mathematica** : cpu = 1.26889 (sec), leaf count = 0 , DifferentialRoot result

{ {y(x) → DifferentialRoot({y, x}, {y''(x)x^4 + y'(x)x^3 + (ax^4 + bx^2 + a)y(x) = 0, y(1) = c1, y'(1) = c2})

✓ **Maple** : cpu = 0.182 (sec), leaf count = 101

$$\left\{ y(x) = _C1 \operatorname{HeunD}\left(0, 2a+b, 0, 2a-b, \frac{x^2+1}{x^2-1}\right) + _C2 \operatorname{HeunD}\left(0, 2a+b, 0, 2a-b, \frac{x^2+1}{x^2-1}\right) \int \frac{1}{x} \left(\right.$$

2.1349 ODE No. 1349

$$y''(x) = -\frac{y(x)}{x^4} - \frac{(x^2+1)y'(x)}{x^3}$$

✓ **Mathematica** : cpu = 0.0890669 (sec), leaf count = 76

$$\left\{ \left\{ y(x) \rightarrow c_2 G_{1,2}^{2,0}\left(-\frac{1}{2x^2} \middle| \begin{matrix} \frac{3}{2} \\ 0,0 \end{matrix} \right) + c_1 e^{\frac{1}{4x^2}} \left(\left(1 - \frac{1}{2x^2}\right) I_0\left(\frac{1}{4x^2}\right) + \frac{I_1\left(\frac{1}{4x^2}\right)}{2x^2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.111 (sec), leaf count = 73

$$\left\{ y(x) = \frac{C1}{x^2} e^{\frac{1}{4x^2}} \left((2x^2-1) I_0\left(\frac{1}{4x^2}\right) + I_1\left(\frac{1}{4x^2}\right) \right) + \frac{C2}{x^2} e^{\frac{1}{4x^2}} \left((2x^2-1) K_0\left(-\frac{1}{4x^2}\right) + K_1\left(-\frac{1}{4x^2}\right) \right) \right\}$$

2.1350 ODE No. 1350

$$y''(x) = -\frac{a^2 y(x)}{x^4} - \frac{2y'(x)}{x}$$

✓ **Mathematica** : cpu = 0.0104718 (sec), leaf count = 25

$$\left\{ \left\{ y(x) \rightarrow c_1 \cos\left(\frac{a}{x}\right) - c_2 \sin\left(\frac{a}{x}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 21

$$\left\{ y(x) = _C1 \sin\left(\frac{a}{x}\right) + _C2 \cos\left(\frac{a}{x}\right) \right\}$$

2.1351 ODE No. 1351

$$y''(x) = \frac{y(x)}{x^4} - \frac{(2x^2 + 1)y'(x)}{x^3}$$

✓ **Mathematica** : cpu = 0.0281212 (sec), leaf count = 50

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{2x^2}} - \sqrt{\frac{\pi}{2}} c_2 e^{\frac{1}{2x^2}} \operatorname{erf}\left(\frac{1}{\sqrt{2x}}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.195 (sec), leaf count = 30

$$\left\{ y(x) = _C1 e^{\frac{1}{2x^2}} + _C2 e^{\frac{1}{2x^2}} \operatorname{Erf}\left(\frac{\sqrt{2}}{2x}\right) \right\}$$

2.1352 ODE No. 1352

$$y''(x) = -\frac{2(a+x)y'(x)}{x^2} - \frac{by(x)}{x^4}$$

✓ **Mathematica** : cpu = 0.0145468 (sec), leaf count = 89

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{\sqrt{b}\left(-\frac{\sqrt{a^2-b}}{\sqrt{b}} - \frac{a}{\sqrt{b}}\right)}{x}} + c_2 e^{-\frac{\sqrt{b}\left(\frac{\sqrt{a^2-b}}{\sqrt{b}} - \frac{a}{\sqrt{b}}\right)}{x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.059 (sec), leaf count = 43

$$\left\{ y(x) = _C1 e^{\frac{1}{x}(a-\sqrt{a^2-b})} + _C2 e^{\frac{1}{x}(a+\sqrt{a^2-b})} \right\}$$

2.1353 ODE No. 1353

$$y''(x) = \frac{(2x^2 - 1)y'(x)}{x^3} - \frac{y(x)}{x^4}$$

✓ **Mathematica** : cpu = 0.10906 (sec), leaf count = 119

$$\left\{ \left\{ y(x) \rightarrow c_1 \left(x^3 + 2x - \frac{1}{x} \right) - \frac{c_2 \left(\sqrt{2\pi} x^4 \operatorname{erfi}\left(\frac{1}{\sqrt{2x}}\right) + 2\sqrt{2\pi} x^2 \operatorname{erfi}\left(\frac{1}{\sqrt{2x}}\right) - \sqrt{2\pi} \operatorname{erfi}\left(\frac{1}{\sqrt{2x}}\right) + 2e^{\frac{1}{2x^2}} x - 2 \right)}{16x} \right\} \right\}$$

✓ **Maple** : cpu = 0.416 (sec), leaf count = 68

$$\left\{ y(x) = \frac{-C1}{x} \left(\sqrt{2}\sqrt{\pi}(x^4 + 2x^2 - 1) \operatorname{erfi}\left(\frac{\sqrt{2}}{2x}\right) + (-2x^3 + 2x) e^{\frac{1}{2x^2}} \right) + \frac{-C2(x^4 + 2x^2 - 1)}{x} \right\}$$

2.1354 ODE No. 1354

$$y''(x) = \frac{(2x^2 - 1)y'(x)}{x^3} - \frac{2y(x)}{x^4}$$

✓ **Mathematica** : cpu = 0.0723596 (sec), leaf count = 108

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 \left(-5\sqrt{2\pi}x^2 \operatorname{erfi}\left(\frac{1}{\sqrt{2x}}\right) + \sqrt{2\pi} \operatorname{erfi}\left(\frac{1}{\sqrt{2x}}\right) - 2e^{\frac{1}{2x^2}}x + 4e^{\frac{1}{2x^2}}x^5 + 8e^{\frac{1}{2x^2}}x^3 \right)}{12x^2} + c_1 \left(1 - \frac{1}{5x^2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.332 (sec), leaf count = 32

$$\left\{ y(x) = \frac{-C1(5x^2 - 1)}{x^2} + -C2 {}_1F_1\left(-\frac{5}{2}; -\frac{1}{2}; \frac{1}{2x^2}\right)x^3 \right\}$$

2.1355 ODE No. 1355

$$y''(x) = \frac{xy(x)}{x^3 + 1} - \frac{(x^3 - 1)y'(x)}{x(x^3 + 1)}$$

✓ **Mathematica** : cpu = 0.13074 (sec), leaf count = 59

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2}c_2 \left(2x^2 - x^2\sqrt[3]{x^3 + 1} {}_2F_1\left(\frac{1}{3}, \frac{2}{3}; \frac{5}{3}; -x^3\right) \right) + c_1\sqrt[3]{x^3 + 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.158 (sec), leaf count = 37

$$\left\{ y(x) = -C1 x^2\sqrt[3]{x^3 + 1} {}_2F_1\left(\frac{2}{3}, \frac{4}{3}; \frac{5}{3}; -x^3\right) + -C2\sqrt[3]{x^3 + 1} \right\}$$

2.1356 ODE No. 1356

$$y''(x) = -\frac{y(x)(-n^2 - v(v+1)x^2)}{x^2(x^2+1)} - \frac{(2x^2+1)y'(x)}{x(x^2+1)}$$

✓ **Mathematica** : cpu = 0.294253 (sec), leaf count = 90

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{-n} {}_2F_1\left(-\frac{n}{2} - \frac{v}{2}, -\frac{n}{2} + \frac{v}{2} + \frac{1}{2}; 1-n; -x^2\right) + c_2 x^n {}_2F_1\left(\frac{n}{2} - \frac{v}{2}, \frac{n}{2} + \frac{v}{2} + \frac{1}{2}; n+1; -x^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.083 (sec), leaf count = 29

$$\left\{ y(x) = _C1 \text{LegendreP}\left(v, n, \sqrt{x^2+1}\right) + _C2 \text{LegendreQ}\left(v, n, \sqrt{x^2+1}\right) \right\}$$

2.1357 ODE No. 1357

$$y''(x) = -\frac{(ax^2 + a - 1)y'(x)}{x(x^2+1)} - \frac{y(x)(bx^2 + c)}{x^2(x^2+1)}$$

✓ **Mathematica** : cpu = 0.661625 (sec), leaf count = 288

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{\frac{1}{2}(-\sqrt{a^2-4a-4c+4}-a+2)} {}_2F_1\left(-\frac{1}{4}\sqrt{a^2-2a-4b+1} - \frac{1}{4}\sqrt{a^2-4a-4c+4} + \frac{1}{4}, \frac{1}{4}\sqrt{a^2-2a-4b+1} - \frac{1}{4}\sqrt{a^2-4a-4c+4} + \frac{1}{4}; \frac{1}{2}\sqrt{a^2-4a-4c+4} + \frac{1}{2}; -x^2\right) + c_2 x^{\frac{1}{2}(\sqrt{a^2-4a-4c+4}-a+2)} {}_2F_1\left(-\frac{1}{4}\sqrt{a^2-2a-4b+1} + \frac{1}{4}\sqrt{a^2-4a-4c+4} + \frac{1}{4}, \frac{1}{4}\sqrt{a^2-2a-4b+1} + \frac{1}{4}\sqrt{a^2-4a-4c+4} + \frac{1}{4}; \frac{1}{2}\sqrt{a^2-4a-4c+4} + \frac{1}{2}; -x^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.13 (sec), leaf count = 103

$$\left\{ y(x) = _C1 x^{1-\frac{a}{2}} \text{LegendreP}\left(-\frac{1}{2} + \frac{1}{2}\sqrt{a^2-2a-4b+1}, \frac{1}{2}\sqrt{a^2-4a-4c+4}, \sqrt{x^2+1}\right) + _C2 x^{1-\frac{a}{2}} \text{LegendreQ}\left(-\frac{1}{2} + \frac{1}{2}\sqrt{a^2-2a-4b+1}, \frac{1}{2}\sqrt{a^2-4a-4c+4}, \sqrt{x^2+1}\right) \right\}$$

2.1358 ODE No. 1358

$$y''(x) = \frac{(x^2-2)y'(x)}{x(x^2-1)} - \frac{(x^2-2)y(x)}{x^2(x^2-1)}$$

✓ **Mathematica** : cpu = 0.0664978 (sec), leaf count = 66

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 x \sqrt[4]{x^2-1}}{\sqrt[4]{1-x^2}} + \frac{c_2 x \sqrt[4]{x^2-1} \log(\sqrt{x^2-1} + x)}{\sqrt[4]{1-x^2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.24 (sec), leaf count = 21

$$\left\{ y(x) = _C1 x + _C2 x \ln(x + \sqrt{x^2-1}) \right\}$$

2.1359 ODE No. 1359

$$y''(x) = -\frac{v(v+1)y(x)}{x^2(x^2-1)} - \frac{2xy'(x)}{x^2-1}$$

✓ **Mathematica** : cpu = 0.102466 (sec), leaf count = 86

$$\left\{ \left\{ y(x) \rightarrow c_1 i^{-v} x^{-v} {}_2F_1\left(\frac{1}{2} - \frac{v}{2}, -\frac{v}{2}; \frac{1}{2} - v; x^2\right) + c_2 i^{v+1} x^{v+1} {}_2F_1\left(\frac{v}{2} + \frac{1}{2}, \frac{v}{2} + 1; v + \frac{3}{2}; x^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.092 (sec), leaf count = 57

$$\left\{ y(x) = _C1 {}_2F_1\left(-\frac{v}{2}, \frac{1}{2} - \frac{v}{2}; \frac{1}{2} - v; x^2\right) x^{-v} + _C2 {}_2F_1\left(1 + \frac{v}{2}, \frac{1}{2} + \frac{v}{2}; \frac{3}{2} + v; x^2\right) x^{v+1} \right\}$$

2.1360 ODE No. 1360

$$y''(x) = \frac{v(v+1)y(x)}{x^2} - \frac{2xy'(x)}{x^2-1}$$

✓ **Mathematica** : cpu = 0.0942279 (sec), leaf count = 68

$$\left\{ \left\{ y(x) \rightarrow c_1 i^{-v} x^{-v} {}_2F_1\left(\frac{1}{2}, -v; \frac{1}{2} - v; x^2\right) + c_2 i^{v+1} x^{v+1} {}_2F_1\left(\frac{1}{2}, v+1; v + \frac{3}{2}; x^2\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.075 (sec), leaf count = 47

$$\left\{ y(x) = _C1 {}_2F_1\left(\frac{1}{2}, -v; \frac{1}{2} - v; x^2\right) x^{-v} + _C2 {}_2F_1\left(\frac{1}{2}, v+1; \frac{3}{2} + v; x^2\right) x^{v+1} \right\}$$

2.1361 ODE No. 1361

$$y''(x) = \frac{2xy'(x)}{x^2-1} - \frac{(a(a+1) - a(a+3)x^2)y(x)}{x^2(x^2-1)}$$

✓ **Mathematica** : cpu = 0.480922 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{-a} + c_2 (-2ax^2 + 2a - x^2 + 3) x^{a+1} \right\} \right\}$$

✓ **Maple** : cpu = 0.036 (sec), leaf count = 33

$$\left\{ y(x) = _C1 x^{-a} + _C2 (2ax^2 + x^2 - 2a - 3) x^{a+1} \right\}$$

2.1362 ODE No. 1362

$$y''(x) = \frac{2xy'(x)}{x^2 - 1} - \frac{y(x) ((x^2 - 1)x^2(a - n)(a + n + 1) + 2ax^2 + n(n + 1)(x^2 - 1))}{x^2(x^2 - 1)}$$

✗ **Mathematica** : cpu = 13.9903 (sec), leaf count = 0 , DifferentialRoot result

$$\{ \{y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{-2y'(x)x^3 + (a^2x^4 - n^2x^4 + ax^4 - nx^4 - a^2x^2 + 2n^2x^2 + ax^2 + 2nx)\}) \}$$

✓ **Maple** : cpu = 0.258 (sec), leaf count = 109

$$\left\{ y(x) = _C1 \text{HeunC}\left(0, -n - \frac{1}{2}, -2, -\frac{a^2}{4} + \frac{n^2}{4} - \frac{a}{4} + \frac{n}{4}, -\frac{n^2}{4} - \frac{n}{4} + \frac{3}{4} + \frac{a^2}{4} - \frac{a}{4}, x^2\right) x^{-n} + _C2 \text{HeunC}\left(0, -n - \frac{1}{2}, -2, -\frac{a^2}{4} + \frac{n^2}{4} - \frac{a}{4} + \frac{n}{4}, -\frac{n^2}{4} - \frac{n}{4} + \frac{3}{4} + \frac{a^2}{4} - \frac{a}{4}, x^2\right) x^{-n} \right\}$$

2.1363 ODE No. 1363

$$y''(x) = -\frac{(ax^2 + a - 2)y'(x)}{x(x^2 - 1)} - \frac{by(x)}{x^2}$$

✓ **Mathematica** : cpu = 0.78148 (sec), leaf count = 236

$$\left\{ \left\{ y(x) \rightarrow c_1(-1)^{\frac{1}{4}(-\sqrt{a^2-2a-4b+1+a-1})} x^{\frac{1}{2}(-\sqrt{a^2-2a-4b+1+a-1})} {}_2F_1\left(\frac{a}{2} - \frac{1}{2}, \frac{a}{2} - \frac{1}{2}, \frac{1}{2}\sqrt{a^2 - 2a - 4b + 1} - \frac{1}{2}; 1, -x\right) + c_2(-1)^{\frac{1}{4}(\sqrt{a^2-2a-4b+1+a-1})} x^{\frac{1}{2}(\sqrt{a^2-2a-4b+1+a-1})} {}_2F_1\left(\frac{a}{2} - \frac{1}{2}, \frac{a}{2} - \frac{1}{2}, \frac{1}{2}\sqrt{a^2 - 2a - 4b + 1} - \frac{1}{2}; 1, -x\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.167 (sec), leaf count = 171

$$\left\{ y(x) = _C1 x^{\frac{a}{2} - \frac{1}{2} + \frac{1}{2}\sqrt{a^2 - 2a - 4b + 1}} (x^2 - 1)^{-a+2} {}_2F_1\left(-\frac{a}{2} + \frac{3}{2}, -\frac{a}{2} + \frac{3}{2} + \frac{1}{2}\sqrt{a^2 - 2a - 4b + 1}; 1 + \frac{1}{2}\sqrt{a^2 - 2a - 4b + 1}, -x\right) + _C2 x^{\frac{a}{2} - \frac{1}{2} - \frac{1}{2}\sqrt{a^2 - 2a - 4b + 1}} (x^2 - 1)^{-a+2} {}_2F_1\left(-\frac{a}{2} + \frac{3}{2}, -\frac{a}{2} + \frac{3}{2} - \frac{1}{2}\sqrt{a^2 - 2a - 4b + 1}; 1 - \frac{1}{2}\sqrt{a^2 - 2a - 4b + 1}, -x\right) \right\}$$

2.1364 ODE No. 1364

$$y''(x) = \frac{y'(x)(2(a - 1)x^2 - 2a + 2bc(x^2 - 1)x^c)}{x(x^2 - 1)} - \frac{y(x)(bc(2a - c - 1)x^{c+2} - bc(2a - c + 1)x^c + x^2((a - 1)x^c - bc))}{x^2(x^2 - 1)}$$

✓ **Mathematica** : cpu = 0.168797 (sec), leaf count = 42

$$\{ \{y(x) \rightarrow c_1 P_v(x) e^{a \log(x) + bx^c} + c_2 Q_v(x) e^{a \log(x) + bx^c} \} \}$$

✓ **Maple** : cpu = 0.117 (sec), leaf count = 33

$$\{ y(x) = _C1 x^a e^{bx^c} \text{LegendreP}(v, x) + _C2 x^a e^{bx^c} \text{LegendreQ}(v, x) \}$$

2.1365 ODE No. 1365

$$y''(x) = -\frac{ay(x)}{(x^2 + 1)^2}$$

✓ **Mathematica** : cpu = 0.0963673 (sec), leaf count = 72

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{x^2 + 1} e^{i\sqrt{a+1} \tan^{-1}(x)} + \frac{ic_2 \sqrt{x^2 + 1} e^{-i\sqrt{a+1} \tan^{-1}(x)}}{2\sqrt{a+1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.065 (sec), leaf count = 65

$$\left\{ y(x) = -C1 \sqrt{x^2 + 1} \left(\frac{x+i}{-x+i} \right)^{\frac{1}{2}\sqrt{a+1}} + -C2 \sqrt{x^2 + 1} \left(\frac{x+i}{-x+i} \right)^{-\frac{1}{2}\sqrt{a+1}} \right\}$$

2.1366 ODE No. 1366

$$y''(x) = -\frac{2xy'(x)}{x^2 + 1} - \frac{y(x)}{(x^2 + 1)^2}$$

✓ **Mathematica** : cpu = 0.02345 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{\sqrt{x^2 + 1}} + \frac{c_2 x}{\sqrt{x^2 + 1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 24

$$\left\{ y(x) = -C1 x \frac{1}{\sqrt{x^2 + 1}} + -C2 \frac{1}{\sqrt{x^2 + 1}} \right\}$$

2.1367 ODE No. 1367

$$y''(x) = -\frac{y(x) \left(a^2(x^2 + 1)^2 + m^2 - n(n+1)(x^2 + 1) \right)}{(x^2 + 1)^2} - \frac{2xy'(x)}{x^2 + 1}$$

✗ **Mathematica** : cpu = 2.29995 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot} \left(\{y, x\}, \left\{ y''(x) (x^2 + 1)^2 + 2xy'(x) (x^2 + 1) + (a^2 x^4 + 2a^2 x^2 - n^2 x^2 - nx^2 + \dots \right\} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.492 (sec), leaf count = 96

$$\left\{ y(x) = {}_C1 (x^2 + 1)^{\frac{m}{2}} \text{HeunC}\left(0, -\frac{1}{2}, m, -\frac{a^2}{4}, \frac{1}{4} + \frac{a^2}{4} + \frac{m^2}{4} - \frac{n^2}{4} - \frac{n}{4}, -x^2\right) + {}_C2 (x^2 + 1)^{\frac{m}{2}} x \text{HeunC}\left(0, -\frac{1}{2}, m, -\frac{a^2}{4}, \frac{1}{4} + \frac{a^2}{4} + \frac{m^2}{4} - \frac{n^2}{4} - \frac{n}{4}, -x^2\right) \right\}$$

2.1368 ODE No. 1368

$$y''(x) = -\frac{axy'(x)}{x^2 + 1} - \frac{by(x)}{(x^2 + 1)^2}$$

✓ **Mathematica** : cpu = 0.0278908 (sec), leaf count = 106

$$\left\{ \left\{ y(x) \rightarrow c_1 (x^2 + 1)^{\frac{2-a}{4}} P_{\frac{a-2}{2}}^{\frac{1}{2}\sqrt{a^2-4a+4b+4}}(ix) + c_2 (x^2 + 1)^{\frac{2-a}{4}} Q_{\frac{a-2}{2}}^{\frac{1}{2}\sqrt{a^2-4a+4b+4}}(ix) \right\} \right\}$$

✓ **Maple** : cpu = 0.093 (sec), leaf count = 81

$$\left\{ y(x) = {}_C1 (x^2 + 1)^{\frac{1}{2}-\frac{a}{4}} \text{LegendreP}\left(\frac{a}{2} - 1, \frac{1}{2}\sqrt{a^2 - 4a + 4b + 4}, ix\right) + {}_C2 (x^2 + 1)^{\frac{1}{2}-\frac{a}{4}} \text{LegendreQ}\left(\frac{a}{2} - 1, \frac{1}{2}\sqrt{a^2 - 4a + 4b + 4}, ix\right) \right\}$$

2.1369 ODE No. 1369

$$y''(x) = -\frac{ay(x)}{(x^2 - 1)^2}$$

✓ **Mathematica** : cpu = 0.104052 (sec), leaf count = 75

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{1-x^2} e^{-\sqrt{1-a} \tanh^{-1}(x)} + \frac{c_2 \sqrt{1-x^2} e^{\sqrt{1-a} \tanh^{-1}(x)}}{2\sqrt{1-a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.073 (sec), leaf count = 61

$$\left\{ y(x) = {}_C1 \sqrt{x^2 - 1} \left(\frac{x-1}{1+x}\right)^{\frac{1}{2}\sqrt{1-a}} + {}_C2 \sqrt{x^2 - 1} \left(\frac{x-1}{1+x}\right)^{-\frac{1}{2}\sqrt{1-a}} \right\}$$

2.1370 ODE No. 1370

$$y''(x) = \frac{a^2 y(x)}{(x^2 - 1)^2} - \frac{2xy'(x)}{x^2 - 1}$$

✓ **Mathematica** : cpu = 0.0303111 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow c_1 \cosh \left(\frac{1}{2} a (\log(1-x) - \log(x+1)) \right) + i c_2 \sinh \left(\frac{1}{2} a (\log(1-x) - \log(x+1)) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.012 (sec), leaf count = 19

$$\{y(x) = _C1 \sinh(a \operatorname{Artanh}(x)) + _C2 \cosh(a \operatorname{Artanh}(x))\}$$

2.1371 ODE No. 1371

$$y''(x) = -\frac{y(x)(-a^2 - \lambda(x^2 - 1))}{(x^2 - 1)^2} - \frac{2xy'(x)}{x^2 - 1}$$

✓ **Mathematica** : cpu = 0.0221128 (sec), leaf count = 48

$$\left\{ \left\{ y(x) \rightarrow c_1 P_{\frac{1}{2}(\sqrt{4\lambda+1}-1)}^a(x) + c_2 Q_{\frac{1}{2}(\sqrt{4\lambda+1}-1)}^a(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.055 (sec), leaf count = 37

$$\left\{ y(x) = _C1 \operatorname{LegendreP} \left(\frac{1}{2} \sqrt{1+4\lambda} - \frac{1}{2}, a, x \right) + _C2 \operatorname{LegendreQ} \left(\frac{1}{2} \sqrt{1+4\lambda} - \frac{1}{2}, a, x \right) \right\}$$

2.1372 ODE No. 1372

$$y''(x) = -\frac{y(x)((x^2 - 1)(ax^2 + bx + c) - k^2)}{(x^2 - 1)^2} - \frac{2xy'(x)}{x^2 - 1}$$

✗ **Mathematica** : cpu = 4.20537 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \operatorname{DifferentialRoot}(\{y, x\}, \{(ax^4 + bx^3 - ax^2 + cx^2 - bx - k^2 - c)y(x) + (2x^3 - 2x)y'(x) + (x^2 - 1)y''(x)\}) \right\} \right\}$$

✓ **Maple** : cpu = 0.289 (sec), leaf count = 120

$$\left\{ y(x) = _C1 e^{\sqrt{-ax}} \operatorname{HeunC} \left(4\sqrt{-a}, k, k, 2b, \frac{k^2}{2} + a - b + c, \frac{1}{2} + \frac{x}{2} \right) (x^2 - 1)^{\frac{k}{2}} + _C2 e^{\sqrt{-ax}} \operatorname{HeunC} \left(4\sqrt{-a}, k, k, 2b, \frac{k^2}{2} + a - b + c, \frac{1}{2} + \frac{x}{2} \right) (x^2 - 1)^{\frac{k}{2}} \right\}$$

2.1373 ODE No. 1373

$$y''(x) = -\frac{y(x) \left(-a^2(x^2 - 1)^2 - m^2 - n(n+1)(x^2 - 1) \right)}{(x^2 - 1)^2} - \frac{2xy'(x)}{x^2 - 1}$$

✗ **Mathematica** : cpu = 2.27609 (sec), leaf count = 0 , DifferentialRoot result

$$\{ \{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{ (-a^2x^4 + 2a^2x^2 - n^2x^2 - nx^2 - a^2 - m^2 + n^2 + n) y(x) + (2x^3 - 2) \}) \} \}$$

✓ **Maple** : cpu = 0.245 (sec), leaf count = 92

$$\left\{ y(x) = _C1 (x^2 - 1)^{\frac{m}{2}} \text{HeunC} \left(0, -\frac{1}{2}, m, -\frac{a^2}{4}, \frac{1}{4} + \frac{a^2}{4} + \frac{m^2}{4} - \frac{n^2}{4} - \frac{n}{4}, x^2 \right) + _C2 (x^2 - 1)^{\frac{m}{2}} x \text{HeunC} \left(0, -\frac{1}{2}, m, -\frac{a^2}{4}, \frac{1}{4} + \frac{a^2}{4} + \frac{m^2}{4} - \frac{n^2}{4} - \frac{n}{4}, x^2 \right) \right\}$$

2.1374 ODE No. 1374

$$y''(x) = \frac{2(2a - 1)xy'(x)}{x^2 - 1} - \frac{y(x) (x^2(2a(2a - 1) - v(v + 1)) + 2a + v(v + 1))}{(x^2 - 1)^2}$$

✓ **Mathematica** : cpu = 0.036723 (sec), leaf count = 32

$$\{ \{ y(x) \rightarrow c_1 (x^2 - 1)^a P_v(x) + c_2 (x^2 - 1)^a Q_v(x) \} \}$$

✓ **Maple** : cpu = 0.06 (sec), leaf count = 29

$$\{ y(x) = _C1 (x^2 - 1)^a \text{LegendreP}(v, x) + _C2 (x^2 - 1)^a \text{LegendreQ}(v, x) \}$$

2.1375 ODE No. 1375

$$y''(x) = -\frac{y(x) (4ax^2(a - n) - (x^2 - 1) (2a + (v - n)(n + v + 1)))}{(x^2 - 1)^2} - \frac{2x(-2a + n + 1)y'(x)}{x^2 - 1}$$

✓ **Mathematica** : cpu = 0.0520915 (sec), leaf count = 54

$$\left\{ \left\{ y(x) \rightarrow c_1 (x^2 - 1)^{\frac{1}{2}(2a-n)} P_v^n(x) + c_2 (x^2 - 1)^{\frac{1}{2}(2a-n)} Q_v^n(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.079 (sec), leaf count = 39

$$\left\{ y(x) = _C1 (x^2 - 1)^{a-\frac{n}{2}} \text{LegendreP}(v, n, x) + _C2 (x^2 - 1)^{a-\frac{n}{2}} \text{LegendreQ}(v, n, x) \right\}$$

2.1376 ODE No. 1376

$$y''(x) = -\frac{by(x)}{x^2(a+x^2)} - \frac{(a+2x^2)y'(x)}{x(a+x^2)}$$

✓ **Mathematica** : cpu = 0.0994389 (sec), leaf count = 82

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin \left(\frac{\sqrt{b}(\log(x) - \log(\sqrt{a}\sqrt{a+x^2} + a))}{\sqrt{a}} \right) + c_1 \cos \left(\frac{\sqrt{b}(\log(x) - \log(\sqrt{a}\sqrt{a+x^2} + a))}{\sqrt{a}} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.04 (sec), leaf count = 71

$$\left\{ y(x) = -C1 \left(\left(\frac{1}{x} (2a + 2\sqrt{a}\sqrt{x^2+a}) \right)^{i\sqrt{b}\frac{1}{\sqrt{a}}} \right)^{-1} + -C2 \left(\frac{1}{x} (2a + 2\sqrt{a}\sqrt{x^2+a}) \right)^{i\sqrt{b}\frac{1}{\sqrt{a}}} \right\}$$

2.1377 ODE No. 1377

$$y''(x) = -\frac{b^2y(x)}{(a^2+x^2)^2}$$

✓ **Mathematica** : cpu = 0.23799 (sec), leaf count = 109

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{a^2+x^2} e^{i\sqrt{\frac{b^2}{a^2}+1} \tan^{-1}\left(\frac{x}{a}\right)} + \frac{ic_2 \sqrt{a^2+x^2} e^{-i\sqrt{\frac{a^2+b^2}{a^2}} \tan^{-1}\left(\frac{x}{a}\right)}}{2a\sqrt{\frac{a^2+b^2}{a^2}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.552 (sec), leaf count = 91

$$\left\{ y(x) = -C1 \sqrt{a^2+x^2} \left(\frac{ix-a}{ix+a} \right)^{\frac{1}{2a}\sqrt{a^2+b^2}} + -C2 \sqrt{a^2+x^2} \left(\frac{ix-a}{ix+a} \right)^{-\frac{1}{2a}\sqrt{a^2+b^2}} \right\}$$

2.1378 ODE No. 1378

$$y''(x) = -\frac{2(x^2 - 1)y'(x)}{(x - 1)^2x} - \frac{(-2x^2 + 2x + 2)y(x)}{(x - 1)^2x^2}$$

✓ **Mathematica** : cpu = 0.0538178 (sec), leaf count = 65

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1x^2}{1-x} + \frac{c_2x(2x^2 \log(1-x) - 2x^2 \log(x) + 2x - 2x \log(1-x) + 2x \log(x) - 1)}{(x-1)^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.055 (sec), leaf count = 50

$$\left\{ y(x) = \frac{C1x^2}{x-1} + \frac{C2x}{(x-1)^2} \left((-x^2 + x) \ln(x-1) + (x^2 - x) \ln(x) - x + \frac{1}{2} \right) \right\}$$

2.1379 ODE No. 1379

$$y''(x) = \frac{12y(x)}{(x+1)^2(x^2+2x+3)}$$

✓ **Mathematica** : cpu = 0.0795375 (sec), leaf count = 99

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 \left(2x^3 + 4x^2 - 3\sqrt{2}x^2 \tan^{-1} \left(\frac{x+1}{\sqrt{2}} \right) + 8x - 6\sqrt{2}x \tan^{-1} \left(\frac{x+1}{\sqrt{2}} \right) - 9\sqrt{2} \tan^{-1} \left(\frac{x+1}{\sqrt{2}} \right) + 2 \right)}{2(x+1)^2} + c_1 \right\} \right\}$$

✓ **Maple** : cpu = 0.069 (sec), leaf count = 65

$$\left\{ y(x) = \frac{-C1(x^2 + 2x + 3)}{(1+x)^2} + \frac{-C2}{(1+x)^2} \left((-3x^2 - 6x - 9) \arctan \left(\frac{(1+x)\sqrt{2}}{2} \right) + \sqrt{2}(x^3 + 2x^2 + 4x) \right) \right\}$$

2.1380 ODE No. 1380

$$y''(x) = -\frac{by(x)}{x^2(x-a)^2}$$

✓ **Mathematica** : cpu = 0.30347 (sec), leaf count = 132

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2(x-a)^{\frac{1}{2}}\sqrt{\frac{a^2-4b}{a^2}} + \frac{1}{2}x^{\frac{1}{2}-\frac{1}{2}}\sqrt{\frac{a^2-4b}{a^2}}}{a\sqrt{\frac{a^2-4b}{a^2}}} + c_1(x-a)^{\frac{1}{2}-\frac{1}{2}}\sqrt{1-\frac{4b}{a^2}}x^{\frac{1}{2}}\sqrt{1-\frac{4b}{a^2}+\frac{1}{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.113 (sec), leaf count = 75

$$\left\{ y(x) = -C1 \sqrt{x(a-x)} \left(\frac{a-x}{x}\right)^{\frac{1}{2a}\sqrt{a^2-4b}} + -C2 \sqrt{x(a-x)} \left(\frac{x}{a-x}\right)^{\frac{1}{2a}\sqrt{a^2-4b}} \right\}$$

2.1381 ODE No. 1381

$$y''(x) = c - \frac{by(x)}{x^2(x-a)^2}$$

✓ **Mathematica** : cpu = 0.593151 (sec), leaf count = 589

$$\left\{ \left\{ y(x) \rightarrow -\frac{2cx^2(a-x)\left(1-\frac{x}{a}\right)^{-\frac{1}{2}}\sqrt{\frac{a^2-4b}{a^2}}\left(\sqrt{\frac{a^2-4b}{a^2}}\left(1-\frac{x}{a}\right)\sqrt{\frac{a^2-4b}{a^2}}{}_2F_1\left(\frac{1}{2}\sqrt{1-\frac{4b}{a^2}}-\frac{1}{2}, \frac{1}{2}\sqrt{1-\frac{4b}{a^2}}+\frac{3}{2}, \frac{1}{2}\right)\right)}{\dots} \right\} \right\}$$

✓ **Maple** : cpu = 0.228 (sec), leaf count = 219

$$\left\{ y(x) = \sqrt{x(a-x)} \left(\frac{a-x}{x}\right)^{\frac{1}{2a}\sqrt{a^2-4b}} -C2 + \sqrt{x(a-x)} \left(\frac{x}{a-x}\right)^{\frac{1}{2a}\sqrt{a^2-4b}} -C1 + c\sqrt{x(a-x)} \left(\left(\frac{x}{a-x}\right)^{\frac{1}{2a}\sqrt{a^2-4b}}\right) \right\}$$

2.1382 ODE No. 1382

$$y''(x) = \frac{cy(x)}{(x-a)^2(x-b)^2}$$

✓ **Mathematica** : cpu = 0.714018 (sec), leaf count = 154

$$\left\{ \left\{ y(x) \rightarrow c_1(x-a)^{\frac{1}{2}} \left(\sqrt{\frac{4c}{(a-b)^2} + 1} + 1 \right) (x-b)^{\frac{1}{2}} \left(1 - \sqrt{\frac{4c}{(a-b)^2} + 1} \right) - \frac{c_2(x-a)^{\frac{1}{2} - \frac{1}{2} \sqrt{\frac{4c}{(a-b)^2} + 1}} (x-b)^{\frac{1}{2} \sqrt{\frac{4c}{(a-b)^2} + 1} + \frac{1}{2}}}{(a-b) \sqrt{\frac{4c}{(a-b)^2} + 1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.125 (sec), leaf count = 116

$$\left\{ y(x) = -C1 \sqrt{(a-x)(b-x)} \left(\frac{a-x}{b-x} \right)^{\frac{1}{2a-2b} \sqrt{a^2-2ab+b^2+4c}} + -C2 \sqrt{(a-x)(b-x)} \left(\frac{a-x}{b-x} \right)^{-\frac{1}{2a-2b} \sqrt{a^2-2ab+b^2+4c}} \right\}$$

2.1383 ODE No. 1383

$$y''(x) = -\frac{y'(x) ((x-a)^2(\alpha + \beta + 1)(x-b) + (x-a)(-\alpha - \beta + 1)(x-b)^2)}{(x-a)^2(x-b)^2} - \frac{\alpha\beta(a-b)^2 y(x)}{(x-a)^2(x-b)^2}$$

✓ **Mathematica** : cpu = 0.142385 (sec), leaf count = 50

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\alpha(\log(x-a) - \log(x-b))} + c_2 e^{\beta(\log(x-a) - \log(x-b))} \right\} \right\}$$

✓ **Maple** : cpu = 0.056 (sec), leaf count = 39

$$\left\{ y(x) = -C1 \left(\frac{a-x}{b-x} \right)^\beta + -C2 \left(\frac{a-x}{b-x} \right)^\alpha \right\}$$

2.1384 ODE No. 1384

$$y''(x) = -\frac{y(x) (-(a^2 - 1)x^2 + 2(a + 3)bx - b^2)}{4x^2}$$

✓ **Mathematica** : cpu = 0.0338597 (sec), leaf count = 110

$$\left\{ \left\{ y(x) \rightarrow c_1 M_{\frac{(a+3)b}{2\sqrt{a^2-1}}, \frac{\sqrt{b(b^2+1)}}{2\sqrt{b}}}(\sqrt{a^2-1}x) + c_2 W_{\frac{(a+3)b}{2\sqrt{a^2-1}}, \frac{\sqrt{b(b^2+1)}}{2\sqrt{b}}}(\sqrt{a^2-1}x) \right\} \right\}$$

✓ **Maple** : cpu = 0.262 (sec), leaf count = 73

$$\left\{ y(x) = -C1 M_{\frac{b(a+3)}{2}, \frac{1}{\sqrt{a^2-1}}, \frac{1}{2}\sqrt{b^2+1}}(\sqrt{a^2-1}x) + -C2 W_{\frac{b(a+3)}{2}, \frac{1}{\sqrt{a^2-1}}, \frac{1}{2}\sqrt{b^2+1}}(\sqrt{a^2-1}x) \right\}$$

2.1385 ODE No. 1385

$$y''(x) = -\frac{(ax^2 + a - 3)y(x)}{4(x^2 + 1)^2}$$

✓ **Mathematica** : cpu = 0.019727 (sec), leaf count = 78

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{x^2 + 1} P_{\frac{1}{2}(\sqrt{1-a}-1)}^{\frac{1}{2}}(ix) + c_2 \sqrt{x^2 + 1} Q_{\frac{1}{2}(\sqrt{1-a}-1)}^{\frac{1}{2}}(ix) \right\} \right\}$$

✓ **Maple** : cpu = 0.073 (sec), leaf count = 61

$$\left\{ y(x) = -C1 \sqrt[4]{x^2 + 1} (x + \sqrt{x^2 + 1})^{\frac{1}{2}\sqrt{1-a}} + -C2 \sqrt[4]{x^2 + 1} (x + \sqrt{x^2 + 1})^{-\frac{1}{2}\sqrt{1-a}} \right\}$$

2.1386 ODE No. 1386

$$y''(x) = \frac{18y(x)}{(2x + 1)^2 (x^2 + x + 1)}$$

✓ **Mathematica** : cpu = 0.0911558 (sec), leaf count = 108

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1(x^2 + x + 1)}{(2x + 1)^2} + \frac{c_2 \left(16x^3 + 24x^2 - 12\sqrt{3}x^2 \tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right) + 30x - 12\sqrt{3}x \tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right) - 12 \right)}{(2x + 1)^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.073 (sec), leaf count = 68

$$\left\{ y(x) = \frac{-C1(x^2 + x + 1)}{(2x + 1)^2} + \frac{-C2}{(2x + 1)^2} \left((36x^2 + 36x + 36) \arctan\left(\frac{(2x + 1)\sqrt{3}}{3}\right) - 16\sqrt{3}(x^3 + x^2 - \dots) \right) \right\}$$

2.1387 ODE No. 1387

$$y''(x) = \frac{3y(x)}{4(x^2 + x + 1)^2}$$

✓ **Mathematica** : cpu = 0.038687 (sec), leaf count = 50

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt{x^2 + x + 1} + \frac{2c_2 \sqrt{x^2 + x + 1} \tan^{-1} \left(\frac{2x+1}{\sqrt{3}} \right)}{\sqrt{3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 36

$$\left\{ y(x) = _C1 \sqrt{x^2 + x + 1} + _C2 \arctan \left(\frac{(2x + 1) \sqrt{3}}{3} \right) \sqrt{x^2 + x + 1} \right\}$$

2.1388 ODE No. 1388

$$y''(x) = -\frac{y(x)(v(v+1)(x-1) - a^2x)}{4(x-1)^2x^2} - \frac{(3x-1)y'(x)}{2(x-1)x}$$

✓ **Mathematica** : cpu = 0.293976 (sec), leaf count = 235

$$\left\{ \left\{ y(x) \rightarrow c_2 (-1)^{\frac{1}{2}(-2v-3)+1} x^{\frac{1}{4}(-2v-3)+1} e^{\frac{1}{4}(-2\log(1-x)-\log(x))} (x-1)^{\frac{1}{2}(\frac{1}{2}(a+v+1)+\frac{1}{2}(a+v+2)+\frac{1}{2}(-2v-3)+1)} {}_2F_1 \left(\frac{1}{2} \right. \right. \right\}$$

✓ **Maple** : cpu = 0.086 (sec), leaf count = 82

$$\left\{ y(x) = _C1 x^{-\frac{v}{2}} (x-1)^{-\frac{a}{2}} {}_2F_1 \left(-\frac{v}{2} - \frac{a}{2}, \frac{1}{2} - \frac{v}{2} - \frac{a}{2}; \frac{1}{2} - v; x \right) + _C2 x^{\frac{1}{2}+\frac{v}{2}} (x-1)^{-\frac{a}{2}} {}_2F_1 \left(1 + \frac{v}{2} - \frac{a}{2}, \frac{1}{2} \right. \right\}$$

2.1389 ODE No. 1389

$$y''(x) = -\frac{y(x)(-4n^2x - v(v+1)(x-1)^2)}{4(x-1)^2x^2} - \frac{(3x-1)y'(x)}{2(x-1)x}$$

✓ **Mathematica** : cpu = 0.379792 (sec), leaf count = 217

$$\left\{ \left\{ y(x) \rightarrow c_2 (-1)^{\frac{1}{2}(-2v-3)+1} x^{\frac{1}{4}(-2v-3)+1} e^{\frac{1}{4}(-2\log(1-x)-\log(x))} (x-1)^{\frac{1}{2}(n+\frac{1}{2}(2n+1)+\frac{1}{2}(-2v-3)+v+2)} {}_2F_1 \left(\frac{1}{2}(2n+1) \right. \right. \right\}$$

✓ **Maple** : cpu = 0.079 (sec), leaf count = 74

$$\left\{ y(x) = _C1 x^{-\frac{v}{2}} (x-1)^{-n} {}_2F_1\left(-v-n, \frac{1}{2}-n; \frac{1}{2}-v; x\right) + _C2 x^{\frac{1}{2}+\frac{v}{2}} (x-1)^{-n} {}_2F_1\left(\frac{1}{2}-n, v-n+1; \frac{1}{2}-v; x\right) \right\}$$

2.1390 ODE No. 1390

$$y''(x) = -\frac{3y(x)}{16(x-1)^2x^2}$$

✓ **Mathematica** : cpu = 0.0421297 (sec), leaf count = 51

$$\left\{ \left\{ y(x) \rightarrow \frac{2c_2(1-x)^{3/4}x^{5/4}}{\sqrt{-(x-1)x}} + c_1(1-x)^{3/4}\sqrt[4]{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 25

$$\left\{ y(x) = _C1 \sqrt[4]{x-1}x^{\frac{3}{4}} + _C2 (x-1)^{\frac{3}{4}}\sqrt[4]{x} \right\}$$

2.1391 ODE No. 1391

$$y''(x) = \frac{(7ax^2+5)y'(x)}{x(ax^2+1)} - \frac{(15ax^2+5)y(x)}{x^2(ax^2+1)}$$

✓ **Mathematica** : cpu = 0.0597797 (sec), leaf count = 27

$$\left\{ \left\{ y(x) \rightarrow c_1x^5 - \frac{1}{4}c_2x(2ax^2+1) \right\} \right\}$$

✓ **Maple** : cpu = 0.027 (sec), leaf count = 20

$$\left\{ y(x) = _C1 x^5 + _C2 (2ax^3+x) \right\}$$

2.1392 ODE No. 1392

$$y''(x) = -\frac{bxy'(x)}{a(x^2-1)} - \frac{y(x)(cx^2+dx+e)}{a(x^2-1)^2}$$

✓ **Mathematica** : cpu = 94.1471 (sec), leaf count = 1763961

Too large to display

✓ **Maple** : cpu = 2.914 (sec), leaf count = 613

$$\left\{ y(x) = -C1 \left(-\frac{1}{2} + \frac{x}{2} \right)^{\frac{1}{4a}(2a + \sqrt{4a^2 + (-4b - 4c - 4d - 4e)a + b^2})} (x^2 - 1)^{-\frac{b}{4a}} {}_2F_1\left(-\frac{1}{4a}, \left(-\sqrt{4a^2 + (-4b - 4c - 4d - 4e)a + b^2}\right)\right)$$

2.1393 ODE No. 1393

$$y''(x) = -\frac{y(x)(bx^2+cx+d)}{a(x-1)^2x^2}$$

✓ **Mathematica** : cpu = 20.5664 (sec), leaf count = 413606

Too large to display

✓ **Maple** : cpu = 0.375 (sec), leaf count = 299

$$\left\{ y(x) = -C1 x^{\frac{1}{2}(\sqrt{a-4d}+\sqrt{a})} \frac{1}{\sqrt{a}} (x-1)^{\frac{1}{2}(\sqrt{a}-\sqrt{a-4b-4c-4d})} \frac{1}{\sqrt{a}} {}_2F_1\left(\frac{1}{2}, \left(-\sqrt{a-4b-4c-4d}+\sqrt{a}+\sqrt{a-4d}\right)\right)$$

2.1394 ODE No. 1394

$$y''(x) = -\frac{cy(x)}{x^2(ax+b)^2} - \frac{2y'(x)}{x}$$

✓ **Mathematica** : cpu = 0.0501997 (sec), leaf count = 115

$$\left\{ \left\{ y(x) \rightarrow c_1 \exp\left(\frac{\sqrt{c}\left(-\frac{\sqrt{b^2-4c}}{\sqrt{c}} - \frac{b}{\sqrt{c}}\right)(\log(x) - \log(ax+b))}{2b}\right) + c_2 \exp\left(\frac{\sqrt{c}\left(\frac{\sqrt{b^2-4c}}{\sqrt{c}} - \frac{b}{\sqrt{c}}\right)(\log(x) - \log(ax+b))}{2b}\right) \right.$$

✓ **Maple** : cpu = 1.01 (sec), leaf count = 89

$$\left\{ y(x) = -C1 \sqrt{\frac{ax+b}{x}} \left(\frac{x}{ax+b}\right)^{\frac{a}{2b} \sqrt{\frac{b^2-4c}{a^2}}} + -C2 \sqrt{\frac{ax+b}{x}} \left(\frac{x}{ax+b}\right)^{-\frac{a}{2b} \sqrt{\frac{b^2-4c}{a^2}}} \right\}$$

2.1395 ODE No. 1395

$$y''(x) = -\frac{y(x)}{(ax+b)^4}$$

✓ **Mathematica** : cpu = 0.159502 (sec), leaf count = 78

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{\sqrt{-\frac{1}{a^4}a}}{ax+b}} (ax+b) + \frac{c_2 e^{-\frac{\sqrt{-\frac{1}{a^4}a}}{ax+b}} (ax+b)}{2\sqrt{-\frac{1}{a^4}a^2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.106 (sec), leaf count = 43

$$\left\{ y(x) = -C1 (ax+b) \sin\left(\frac{1}{a(ax+b)}\right) + -C2 (ax+b) \cos\left(\frac{1}{a(ax+b)}\right) \right\}$$

2.1396 ODE No. 1396

$$y''(x) = -\frac{Ay(x)}{(ax^2+bx+c)^2}$$

✓ **Mathematica** : cpu = 1.40814 (sec), leaf count = 211

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 \sqrt{ax^2+bx+c} \exp\left(-\frac{\sqrt{4ac-b^2} \sqrt{1-\frac{4A}{b^2-4ac}} \tan^{-1}\left(\frac{2ax+b}{\sqrt{4ac-b^2}}\right)\right)}{\sqrt{b^2-4ac} \sqrt{1-\frac{4A}{b^2-4ac}}} + c_1 \sqrt{x(ax+b)+c} \exp\left(\frac{\sqrt{4ac-b^2}}{\sqrt{-4ac-b^2}}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.339 (sec), leaf count = 189

$$\left\{ y(x) = -C1 \sqrt{ax^2+bx+c} \left(1 \left(i\sqrt{4ca-b^2} - 2ax - b\right) \left(2ax + b + i\sqrt{4ca-b^2}\right)^{-1}\right)^{\frac{a}{2} \sqrt{\frac{-4ca+b^2-4A}{a^2}} \frac{1}{\sqrt{-4ca-b^2}}}$$

2.1397 ODE No. 1397

$$y''(x) = \frac{y(x)}{x^5} - \frac{y'(x)}{x^4}$$

✓ **Mathematica** : cpu = 0.0277407 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 \Gamma\left(\frac{1}{3}, -\frac{1}{3x^3}\right)}{3^{2/3} \sqrt[3]{-\frac{1}{x^3}}} + c_1 x \right\} \right\}$$

✓ **Maple** : cpu = 0.417 (sec), leaf count = 27

$$\left\{ y(x) = _C1 x + _C2 x \left(-\frac{\sqrt{3}\Gamma\left(\frac{2}{3}\right)}{2} \Gamma\left(\frac{1}{3}, -\frac{1}{3x^3}\right) + \pi \right) \right\}$$

2.1398 ODE No. 1398

$$y''(x) = -\frac{(-2v+1)^2 + x^2 - 1}{(x^2 - 1)^2} y(x) - \frac{(3x^2 - 1)y'(x)}{x(x^2 - 1)}$$

✗ **Mathematica** : cpu = 1.42562 (sec), leaf count = 0 , DifferentialRoot result

$$\{ \{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{x(x^2 - 4v^2 - 4v - 2)y(x) + (3x^4 - 4x^2 + 1)y'(x) + (x^5 - 2x^3 + x)\}) \}$$

✓ **Maple** : cpu = 0.312 (sec), leaf count = 69

$$\{ y(x) = _C1 (x^2 - 1)^{-v-\frac{1}{2}} {}_2F_1(-v, -v; -2v; -x^2 + 1) + _C2 (x^2 - 1)^{v+\frac{1}{2}} {}_2F_1(v+1, v+1; 2+2v; -x^2 + 1) \}$$

2.1399 ODE No. 1399

$$y''(x) = \frac{(3x+1)y'(x)}{(x-1)(x+1)} - \frac{36(x+1)^2 y(x)}{(x-1)^2(3x+5)^2}$$

✓ **Mathematica** : cpu = 0.054436 (sec), leaf count = 72

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{2}(3\log(1-x)+\log(3x+5))} + \frac{1}{2} c_2 e^{\frac{1}{2}(3\log(1-x)+\log(3x+5))} (3\log(1-x) + \log(3x+5)) \right\} \right\}$$

✓ **Maple** : cpu = 0.085 (sec), leaf count = 46

$$\left\{ y(x) = _C1 (x-1)^{\frac{3}{2}} \sqrt{3x+5} + _C2 (x-1)^{\frac{3}{2}} \sqrt{3x+5} (3 \ln(x-1) + \ln(3x+5)) \right\}$$

2.1400 ODE No. 1400

$$y''(x) = \frac{y'(x)}{x} - \frac{ay(x)}{x^6}$$

✓ **Mathematica** : cpu = 0.0516633 (sec), leaf count = 60

$$\left\{ \left\{ y(x) \rightarrow c_1 x^2 e^{\frac{\sqrt{-a}}{2x^2}} + \frac{c_2 x^2 e^{-\frac{\sqrt{-a}}{2x^2}}}{2\sqrt{-a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.061 (sec), leaf count = 37

$$\left\{ y(x) = _C1 x^2 \sinh\left(\frac{1}{2x^2} \sqrt{-a}\right) + _C2 x^2 \cosh\left(\frac{1}{2x^2} \sqrt{-a}\right) \right\}$$

2.1401 ODE No. 1401

$$y''(x) = -\frac{(a+3x^2)y'(x)}{x^3} - \frac{by(x)}{x^6}$$

✓ **Mathematica** : cpu = 0.0141625 (sec), leaf count = 93

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{\sqrt{b}\left(-\frac{\sqrt{a^2-4b}}{\sqrt{b}} - \frac{a}{\sqrt{b}}\right)}{4x^2}} + c_2 e^{-\frac{\sqrt{b}\left(\frac{\sqrt{a^2-4b}}{\sqrt{b}} - \frac{a}{\sqrt{b}}\right)}{4x^2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.055 (sec), leaf count = 45

$$\left\{ y(x) = _C1 e^{-\frac{1}{4x^2}(-a+\sqrt{a^2-4b})} + _C2 e^{\frac{1}{4x^2}(a+\sqrt{a^2-4b})} \right\}$$

2.1402 ODE No. 1402

$$y''(x) = -\frac{y(x) \left(4a(a+1)x^4 - 2a(x^2-1)x^2 + (x^2-1)^2(x^2-v^2)\right)}{x^2(x^2-1)^2} - \frac{((1-4a)x^2-1)y'(x)}{x(x^2-1)}$$

✗ **Mathematica** : cpu = 4.54296 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{(x^6 + 4a^2x^4 - v^2x^4 + 2ax^4 - 2x^4 + 2v^2x^2 + 2ax^2 + x^2 - v^2) y(x) + \right. \right.$$

✓ **Maple** : cpu = 0.286 (sec), leaf count = 69

$$\left. \left\{ y(x) = _C1 x^v (x^2-1)^a (x^2-1) \text{HeunC}\left(0, v, 1, \frac{1}{4}, \frac{a}{2} + \frac{1}{4}, x^2\right) + _C2 x^{-v} (x^2-1)^a (x^2-1) \text{HeunC}\left(0, -v, 1, \frac{1}{4}, \frac{a}{2} + \frac{1}{4}, x^2\right) \right\} \right.$$

2.1403 ODE No. 1403

$$y''(x) = -y'(x) \left(\frac{-a_1 - b_1 + 1}{x - c_1} + \frac{-a_2 - b_2 + 1}{x - c_2} + \frac{-a_3 - b_3 + 1}{x - c_3} \right) - \frac{y(x) \left(\frac{a_1 b_1 (c_1 - c_2)(c_1 - c_3)}{x - c_1} + \frac{a_2 b_2 (c_2 - c_1)(c_2 - c_3)}{x - c_2} \right)}{(x - c_1)(x - c_2)(x - c_3)}$$

✗ **Mathematica** : cpu = 96.0869 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{(c_1 - x)^2(c_2 - x)^2 y''(x)(c_3 - x)^2 + (c_1 - x)(c_2 - x)(a_1 x^2 + a_2 x^2 + \right. \right.$$

✓ **Maple** : cpu = 1.053 (sec), leaf count = 311

$$\left. \left\{ y(x) = _C1 \text{HeunG}\left(\frac{c_1 - c_3}{c_1 - c_2}, \frac{((-a_3 - 2b_1 - b_2 + 2)c_1 + (a_3 + b_1 - 1)c_2 + c_3(b_1 + b_2 - 1))a_1}{(c_1 - c_2)(c_1 - c_3)}, \frac{c_1 - c_3}{c_1 - c_2}, x\right) \right\} \right.$$

2.1404 ODE No. 1404

$$y''(x) = -\frac{(1 - 2x^2)y(x)}{4x^6} - \frac{(2x^2 + 1)y'(x)}{x^3}$$

✓ **Mathematica** : cpu = 0.0242372 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{\frac{1}{4x^2}}}{x} + c_2 e^{\frac{1}{4x^2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.047 (sec), leaf count = 24

$$\left\{ y(x) = _C1 e^{\frac{1}{4x^2}} + \frac{C2}{x} e^{\frac{1}{4x^2}} \right\}$$

2.1405 ODE No. 1405

$$y''(x) = \frac{(2x^2 + 1)y'(x)}{x^3} - \frac{(ax^4 + 10x^2 + 1)y(x)}{4x^6}$$

✓ **Mathematica** : cpu = 0.075513 (sec), leaf count = 77

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{1}{4x^2}} x^{\frac{3}{2} - \frac{\sqrt{9-a}}{2}} + \frac{c_2 e^{-\frac{1}{4x^2}} x^{\frac{\sqrt{9-a}}{2} + \frac{3}{2}}}{\sqrt{9-a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.089 (sec), leaf count = 47

$$\left\{ y(x) = _C1 x^{\frac{3}{2} + \frac{1}{2}\sqrt{-a+9}} e^{-\frac{1}{4x^2}} + _C2 x^{\frac{3}{2} - \frac{1}{2}\sqrt{-a+9}} e^{-\frac{1}{4x^2}} \right\}$$

2.1406 ODE No. 1406

$$y''(x) = -\frac{27xy(x)}{16(x^3 - 1)^2}$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.151 (sec), leaf count = 53

$$\left\{ y(x) = _C1 \sqrt{x} \sqrt[4]{x^3 - 1} \text{LegendreP}\left(-\frac{1}{6}, \frac{1}{3}, \sqrt{-x^3 + 1}\right) + _C2 \sqrt{x} \sqrt[4]{x^3 - 1} \text{LegendreQ}\left(-\frac{1}{6}, \frac{1}{3}, \sqrt{-x^3 + 1}\right) \right\}$$

2.1407 ODE No. 1407

$$y''(x) = -y'(x) \left(\frac{b1(-a11 - b11 + 1)}{b1x - a1} + \frac{b2(-a12 - b12 + 1)}{b2x - a2} + \frac{b3(-a13 - b13 + 1)}{b3x - a3} \right) - \frac{y(x) \left(\frac{a11b1(a1b2 - a2b1)}{b1x - a1} + \frac{a12b2(a2b3 - a3b2)}{b2x - a2} + \frac{a13b3(a3b1 - a1b3)}{b3x - a3} \right)}{b1x - a1}$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 2.914 (sec), leaf count = 2907

$$\left\{ y(x) = _C1 \operatorname{HeunG} \left(\frac{b2(a1b3 - a3b1)}{b3(a1b2 - b1a2)}, -\frac{1}{4b3(a1b2 - b1a2)} \left(\left((2b2(a1b3 - a3b1) \sqrt{a12^2 + 6} \right) \right) \right) \right\}$$

2.1408 ODE No. 1408

$$y''(x) = -\frac{y(x)(Ax^2 + B)}{x(x^2 - a1)(x^2 - a2)(x^2 - a3)} - \frac{y'(x)(x^2((x^2 - a1)(x^2 - a2) + (x^2 - a1)(x^2 - a3) + (x^2 - a2)(x^2 - a3))}{x(x^2 - a1)(x^2 - a2)(x^2 - a3)}$$

✗ **Mathematica** : cpu = 60.5982 (sec), leaf count = 0 , DifferentialRoot result

{ {y(x) → DifferentialRoot({y, x}, {(Ax^2 + B)y(x) + (2x^6 - a1x^4 - a2x^4 - a3x^4 + a1a2a3)y'(x) - x(a1x^2 + a2x^2 + a3x^2)})}

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \operatorname{DESol} \left(\left\{ \frac{d^2}{dx^2} Y(x) + \frac{(x^2((x^2 - a1)(x^2 - a2) + (x^2 - a2)(x^2 - a3) + (x^2 - a3)(x^2 - a1))}{(x^2 - a1)(x^2 - a2)x(x^2 - a3)} Y(x) \right\} \right) \right\}$$

2.1409 ODE No. 1409

$$y''(x) = -b^2x^{-2a}y(x) - \frac{ay'(x)}{x}$$

✓ **Mathematica** : cpu = 0.0245645 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow c_1 \cos \left(\frac{bx^{1-a}}{a-1} \right) - c_2 \sin \left(\frac{bx^{1-a}}{a-1} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 39

$$\left\{ y(x) = _C1 \sin \left(\frac{x^{1-a}b}{a-1} \right) + _C2 \cos \left(\frac{x^{1-a}b}{a-1} \right) \right\}$$

2.1410 ODE No. 1410

$$y''(x) = -\frac{y'(x)(apx^b + q)}{x(ax^b - 1)} - \frac{y(x)(arx^b + s)}{x^2(ax^b - 1)}$$

✓ **Mathematica** : cpu = 0.134248 (sec), leaf count = 481

$$\left\{ \left\{ y(x) \rightarrow c_1 i^{-\frac{\sqrt{q^2+2q+4s+1}+q+1}{b}} a^{-\frac{\sqrt{q^2+2q+4s+1}+q+1}{2b}} (x^b)^{-\frac{\sqrt{q^2+2q+4s+1}+q+1}{2b}} {}_2F_1\left(\frac{p}{2b} + \frac{q}{2b} - \frac{\sqrt{p^2 - 2p - 4r + 1}}{2b} - \dots \right) \right. \right.$$

✓ **Maple** : cpu = 0.276 (sec), leaf count = 253

$$\left\{ y(x) = -C1 {}_2F_1\left(\frac{1}{2b}\left(p + q + \sqrt{q^2 + 2q + 4s + 1} + \sqrt{p^2 - 2p - 4r + 1}\right), \frac{1}{2b}\left(p + q + \sqrt{q^2 + 2q + 4s + 1}\right) \dots \right) \right.$$

2.1411 ODE No. 1411

$$y''(x) = \frac{y(x)}{e^x + 1}$$

✓ **Mathematica** : cpu = 0.336037 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow c_1(e^{-x} + 1) + c_2 e^{-x}(e^x \log(e^x + 1) + \log(e^x + 1) + 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.048 (sec), leaf count = 27

$$\left\{ y(x) = (((e^x + 1)^{-1} + \ln(e^x + 1)) - C1 + -C2) (1 + (e^x)^{-1}) \right\}$$

2.1412 ODE No. 1412

$$y''(x) = \frac{y'(x)}{x \log(x)} + y(x) \log^2(x)$$

✓ **Mathematica** : cpu = 0.0165822 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow c_1 \cosh(x(\log(x) - 1)) + i c_2 \sinh(x(\log(x) - 1)) \right\} \right\}$$

✓ **Maple** : cpu = 0.011 (sec), leaf count = 27

$$\left\{ y(x) = -C1 \sinh(x \ln(x) - x) + -C2 \cosh(x \ln(x) - x) \right\}$$

2.1413 ODE No. 1413

$$y''(x) = \frac{y'(x)}{x(\log(x) - 1)} - \frac{y(x)}{x^2(\log(x) - 1)}$$

✗ **Mathematica** : cpu = 0.3438 (sec), leaf count = 0 , could not solve

DSolve[Derivative[2][y][x] == -(y[x]/(x^2*(-1 + Log[x]))) + Derivative[1][y][x]/(x*(1 + Log[x])), y[x], x]

✓ **Maple** : cpu = 0.072 (sec), leaf count = 12

$$\{y(x) = _C1 x + _C2 \ln(x)\}$$

2.1414 ODE No. 1414

$$y''(x) = y(x) (-\operatorname{csch}^2(x)) (-a^2 \sinh^2(x) - (n-1)n)$$

✓ **Mathematica** : cpu = 1.14134 (sec), leaf count = 231

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 (-1)^{\frac{1}{2}(-2n-1)+1} \tanh^2(x)^{\frac{1}{4}(-2n-1)+1} (\tanh^2(x) - 1)^{\frac{1}{2}(\frac{a+n}{2} + \frac{1}{2}(a+n+1) + \frac{1}{2}(-2n-1)+1) - \frac{1}{2}} {}_2F_1\left(\frac{1}{2}(-2n-1), \frac{1}{2}\right)}{\sqrt{\tanh(x)}} \right. \right.$$

✓ **Maple** : cpu = 0.293 (sec), leaf count = 97

$$\left. \left\{ y(x) = _C1 (\sinh(x))^n {}_2F_1\left(\frac{a}{2} + \frac{n}{2}, -\frac{a}{2} + \frac{n}{2}; \frac{1}{2}; \frac{\cosh(2x)}{2} + \frac{1}{2}\right) + _C2 (\sinh(x))^n (2 \cosh(2x) + 2)^{\frac{3}{4}} \right. \right.$$

2.1415 ODE No. 1415

$$y''(x) = -(n^2 - a^2) y(x) - 2n \operatorname{coth}(x) y'(x)$$

✓ **Mathematica** : cpu = 0.840976 (sec), leaf count = 273

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 (-1)^{\frac{1}{2}(-2n-1)+1} \tanh^2(x)^{\frac{1}{4}(-2n-1)+1} (\tanh^2(x) - 1)^{\frac{1}{2}(\frac{a+n}{2} + \frac{1}{2}(a+n+1) + \frac{1}{2}(-2n-1)+1)} {}_2F_1\left(\frac{1}{2}(-2n-1), \frac{1}{2}\right)}{\sqrt{\tanh(x)}} \right. \right.$$

✓ **Maple** : cpu = 0.174 (sec), leaf count = 43

$$\left. \left\{ y(x) = _C1 (\sinh(x))^{\frac{1}{2}-n} \operatorname{LegendreP}\left(a - \frac{1}{2}, n - \frac{1}{2}, \cosh(x)\right) + _C2 (\sinh(x))^{\frac{1}{2}-n} \operatorname{LegendreQ}\left(a - \frac{1}{2}, n - \frac{1}{2}, \cosh(x)\right) \right. \right.$$

2.1416 ODE No. 1416

$$y''(x) = -(v - n)(n + v + 1)y(x) - (2n + 1) \cot(x)y'(x)$$

✓ **Mathematica** : cpu = 0.19359 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow c_1 (\cos^2(x) - 1)^{-n/2} P_v^n(\cos(x)) + c_2 (\cos^2(x) - 1)^{-n/2} Q_v^n(\cos(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.279 (sec), leaf count = 31

$$\{y(x) = _C1 (\sin(x))^{-n} \text{LegendreP}(v, n, \cos(x)) + _C2 (\sin(x))^{-n} \text{LegendreQ}(v, n, \cos(x))\}$$

2.1417 ODE No. 1417

$$y''(x) = -\csc(x)y'(x) (\sin^2(x) - \cos(x)) - y(x) \sin^2(x)$$

✓ **Mathematica** : cpu = 0.141552 (sec), leaf count = 52

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{\cos(x)}{2}} \cos\left(\frac{1}{2}\sqrt{3} \cos(x)\right) + c_2 e^{\frac{\cos(x)}{2}} \sin\left(\frac{1}{2}\sqrt{3} \cos(x)\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.158 (sec), leaf count = 35

$$\left\{ y(x) = _C1 e^{\frac{\cos(x)}{2}} \sin\left(\frac{\sqrt{3} \cos(x)}{2}\right) + _C2 e^{\frac{\cos(x)}{2}} \cos\left(\frac{\sqrt{3} \cos(x)}{2}\right) \right\}$$

2.1418 ODE No. 1418

$$y''(x) = \frac{y(x) \sin(x)}{x \cos(x) - \sin(x)} - \frac{x \sin(x)y'(x)}{x \cos(x) - \sin(x)}$$

✗ **Mathematica** : cpu = 1.24282 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[2][y][x] == (Sin[x]*y[x])/(x*Cos[x] - Sin[x]) - (x*Sin[x]*Derivative`

✓ **Maple** : cpu = 17.292 (sec), leaf count = 61

$$\left\{ y(x) = _C1 \sin(x) + _C2 \sin(x) \int e^{\int \frac{-2(\cos(x))^3 x + 3(\cos(x))^2 \sin(x) - \sin(x)}{\cos(x)(\cos(x)x - \sin(x)) \sin(x)} dx} \cos(x) dx \right\}$$

2.1419 ODE No. 1419

$$y''(x) = -\frac{\sec(x)y'(x)(x^2 \sin(x) - 2x \cos(x))}{x^2} - \frac{y(x) \sec(x)(2x \cos(x) - x \sin(x))}{x^2}$$

✗ **Mathematica** : cpu = 1.16086 (sec), leaf count = 0 , could not solve

DSolve[Derivative[2][y][x] == -((Sec[x]*(2*x*Cos[x] - x*Sin[x])*y[x])/x^2) - (Sec[x]*2*x*Cos[x] + x^2*Sin[x])*Derivative[1][y][x])/x^2, y[x], x]

✓ **Maple** : cpu = 0.371 (sec), leaf count = 13

$$\{y(x) = _C1 x + _C2 x \sin(x)\}$$

2.1420 ODE No. 1420

$$\cos^2(x)y''(x) - y(x)(a \cos^2(x) + (n-1)n) = 0$$

✓ **Mathematica** : cpu = 0.434688 (sec), leaf count = 134

$$\left\{ \left\{ y(x) \rightarrow c_1 i^{1-n} \cos^{1-n}(x) {}_2F_1\left(-\frac{n}{2} - \frac{i\sqrt{a}}{2} + \frac{1}{2}, -\frac{n}{2} + \frac{i\sqrt{a}}{2} + \frac{1}{2}; \frac{3}{2} - n; \cos^2(x)\right) + c_2 i^n \cos^n(x) {}_2F_1\left(\frac{n}{2}\right. \right. \right.$$

✓ **Maple** : cpu = 0.307 (sec), leaf count = 123

$$\left. \left. \left. y(x) = _C1 \sin(2x) (\cos(x))^{-n} {}_2F_1\left(1 + \frac{i}{2}\sqrt{a} - \frac{n}{2}, 1 - \frac{i}{2}\sqrt{a} - \frac{n}{2}; \frac{3}{2} - n; \frac{\cos(2x)}{2} + \frac{1}{2}\right) + _C2 (\cos(x))^{-n} \right\} \right\}$$

2.1421 ODE No. 1421

$$y''(x) = -a^2 n y(x) \sec^2(ax) ((n-1) \sin^2(ax) + \cos^2(ax)) - a(n-1) \sin(2ax) \sec^2(ax) y'(x)$$

✓ **Mathematica** : cpu = 0.247386 (sec), leaf count = 67

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\sqrt{-a^2}x} \cos^{n-1}(ax) + \frac{c_2 e^{\sqrt{-a^2}x} \cos^{n-1}(ax)}{2\sqrt{-a^2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.076 (sec), leaf count = 27

$$\{y(x) = _C1 (\cos(ax))^n + _C2 \sin(ax) (\cos(ax))^{n-1}\}$$

2.1422 ODE No. 1422

$$y''(x) = 2y(x) \csc^2(x)$$

✓ **Mathematica** : cpu = 0.087522 (sec), leaf count = 64

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 \cos(x)}{\sqrt{\cos^2(x) - 1}} + \frac{c_2 \left(\cos(x) \log \left(\sqrt{\cos^2(x) - 1} + \cos(x) \right) - \sqrt{\cos^2(x) - 1} \right)}{\sqrt{\cos^2(x) - 1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.247 (sec), leaf count = 57

$$\left\{ y(x) = \frac{-C1 \sin(2x)}{\cos(2x) - 1} + \frac{-C2 (-i \ln(\cos(2x) + i \sin(2x)) \sin(2x) + 2 \cos(2x) - 2)}{\cos(2x) - 1} \right\}$$

2.1423 ODE No. 1423

$$y''(x) = -ay(x) \csc^2(x)$$

✓ **Mathematica** : cpu = 0.0719046 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt[4]{\cos^2(x) - 1} P_{-\frac{1}{2}}^{\frac{1}{2}\sqrt{1-4a}}(\cos(x)) + c_2 \sqrt[4]{\cos^2(x) - 1} Q_{-\frac{1}{2}}^{\frac{1}{2}\sqrt{1-4a}}(\cos(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.261 (sec), leaf count = 165

$$\left\{ y(x) = -C1 \sqrt[4]{2 \cos(2x) + 2} {}_2F_1\left(\frac{1}{4}\sqrt{1-4a} + \frac{1}{4}, \frac{1}{4}\sqrt{1-4a} + \frac{1}{4}; \frac{1}{2}; \frac{\cos(2x)}{2} + \frac{1}{2}\right) \sqrt{-2 \cos(2x) + 2} \right\}$$

2.1424 ODE No. 1424

$$\sin^2(x)y''(x) - y(x)(a \sin^2(x) + (n-1)n) = 0$$

✓ **Mathematica** : cpu = 0.169522 (sec), leaf count = 90

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt[4]{\cos^2(x) - 1} P_{\frac{1}{2}(2n-1)}^{\frac{1}{2}i(2\sqrt{a}+i)}(\cos(x)) + c_2 \sqrt[4]{\cos^2(x) - 1} Q_{\frac{1}{2}i(2\sqrt{a}+i)}^{\frac{1}{2}(2n-1)}(\cos(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.27 (sec), leaf count = 125

$$\left\{ y(x) = -C1 \left(\frac{\cos(2x)}{2} - \frac{1}{2} \right)^{\frac{n}{2}} {}_2F_1\left(\frac{n}{2} + \frac{i}{2}\sqrt{a}, \frac{n}{2} - \frac{i}{2}\sqrt{a}; \frac{1}{2}; \frac{\cos(2x)}{2} + \frac{1}{2}\right) + -C2 (2 \cos(2x) + 2)^{\frac{3}{4}} {}_2F_1\left(\frac{n}{2} + \frac{i}{2}\sqrt{a}, \frac{n}{2} - \frac{i}{2}\sqrt{a}; \frac{1}{2}; \frac{\cos(2x)}{2} + \frac{1}{2}\right) \right\}$$

2.1425 ODE No. 1425

$$y''(x) = y(x) \csc^2(x) (-(-a^2 \cos^2(x) - (3 - 2a) \cos(x) + 3a - 3))$$

✓ **Mathematica** : cpu = 0.734013 (sec), leaf count = 236

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 \sqrt{1 - \cos(x)} \left(-\frac{(2a-1)(\cos(x)+1)}{-2a \cos(x)+\cos(x)+2} \right)^{a+\frac{1}{2}} (-2a \cos(x) + \cos(x) + 2) (1 - \cos^2(x))^{-a} \left(\frac{(2a-1)\cos(x)}{(2a-1)\cos(x)} \right)}{\dots} \right. \right.$$

✓ **Maple** : cpu = 0.441 (sec), leaf count = 101

$$\left\{ y(x) = _C1 (-2 + (2a - 1) \cos(x)) \sqrt[4]{2 \cos(x) + 2} (\sin(x))^{a-\frac{1}{2}} (-2 \cos(x) + 2)^{-\frac{3}{4}} + _C2 {}_2F_1(-a - \frac{1}{2}, \dots)$$

2.1426 ODE No. 1426

$$\sin^2(x)y''(x) - y(x) \left(a^2 \cos^2(x) + \frac{b^2}{(2a - 3)^2} + 3a + b \cos(x) + 2 \right) = 0$$

✓ **Mathematica** : cpu = 6.14384 (sec), leaf count = 4128

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 (\cos(x) + 1) \left(-\frac{8a^2}{-16a^2+48a-36} + \frac{24a}{-16a^2+48a-36} + a - \frac{-32a^2+96a+\sqrt{(32a^2-96a+72)^2-4(-16a^2+48a-36)(16a^4+16ba^2-88a^2)}}{2(-16a^2+48a-36)} \right)^{\frac{1}{2}}}{\dots} \right. \right.$$

✓ **Maple** : cpu = 0.591 (sec), leaf count = 599

$$\left\{ y(x) = _C1 \left(\frac{\cos(x)}{2} - \frac{1}{2} \right)^{\frac{1}{8a-12} \left(4a-6+\sqrt{4b^2+16(a-3/2)^2b+16a^4-72a^2+81} \right)} {}_2F_1\left(\frac{1}{8a-12} \left(8a^2 - \sqrt{4b^2 - 16} \right), \dots \right)$$

2.1427 ODE No. 1427

$$y''(x) = y(x) (-\csc^2(x)) (-(a^2b^2 - (a+1)^2) \sin^2(x) - a(a+1)b \sin(2x) - (a-1)a)$$

✗ **Mathematica** : cpu = 200.861 (sec), leaf count = 0 , could not solve

DSolve[Derivative[2][y][x] == -(Csc[x]^2*(-((-1+a)*a) - ((-1+a)^2 + a^2*b^2)*Sin[x]

✓ **Maple** : cpu = 1.834 (sec), leaf count = 262

$$\left\{ y(x) = _C1 e^{\int \frac{1}{\sin(2x)(b \sin(2x) + \cos(2x) + 1)} (2b((a+1) \cos(2x) + a + 1/2) \sin(2x) - ((ab^2 - a - 2) \cos(2x) - ab^2 - a + 1)(\cos(2x) + 1)) dx} \sqrt{\sin(2x)} \right\}$$

2.1428 ODE No. 1428

$$y''(x) = y(x) (-\csc^2(x)) (a \cos^2(x) + b \sin^2(x) + c)$$

✓ **Mathematica** : cpu = 0.389781 (sec), leaf count = 104

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt[4]{\cos^2(x) - 1} P_{\frac{1}{2}}^{\frac{1}{2} \sqrt{-4a-4c+1}}(\cos(x)) + c_2 \sqrt[4]{\cos^2(x) - 1} Q_{\frac{1}{2}}^{\frac{1}{2} \sqrt{-4a-4c+1}}(\cos(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.297 (sec), leaf count = 219

$$\left\{ y(x) = _C1 \sqrt[4]{2 \cos(2x) + 2} {}_2F_1\left(\frac{1}{4} \sqrt{-4a+1-4c} + \frac{1}{2} \sqrt{-a+b} + \frac{1}{4}, \frac{1}{4} \sqrt{-4a+1-4c} - \frac{1}{2} \sqrt{-a+b} - \frac{1}{4}\right) \right\}$$

2.1429 ODE No. 1429

$$y''(x) = y(x) \csc^2(x) - \cot(x) y'(x)$$

✓ **Mathematica** : cpu = 0.0580307 (sec), leaf count = 51

$$\left\{ \left\{ y(x) \rightarrow c_1 \cosh\left(\log\left(\cos\left(\frac{x}{2}\right)\right) - \log\left(\sin\left(\frac{x}{2}\right)\right)\right) - i c_2 \sinh\left(\log\left(\cos\left(\frac{x}{2}\right)\right) - \log\left(\sin\left(\frac{x}{2}\right)\right)\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.05 (sec), leaf count = 25

$$\left\{ y(x) = \frac{\sin(x) _C1}{\cos(x) - 1} + \frac{(\cos(x) - 1) _C2}{\sin(x)} \right\}$$

2.1430 ODE No. 1430

$$y''(x) = y(x) \csc^2(x) (-(v(v+1) \sin^2(x) - n^2)) - \cot(x)y'(x)$$

✓ **Mathematica** : cpu = 0.453229 (sec), leaf count = 22

$$\{\{y(x) \rightarrow c_1 P_v^n(\cos(x)) + c_2 Q_v^n(\cos(x))\}\}$$

✓ **Maple** : cpu = 0.349 (sec), leaf count = 122

$$\left\{ y(x) = _C1 \sin(2x) \left(\frac{\cos(2x)}{2} - \frac{1}{2} \right)^{\frac{n}{2}} {}_2F_1\left(1 + \frac{v}{2} + \frac{n}{2}, \frac{1}{2} - \frac{v}{2} + \frac{n}{2}; \frac{3}{2}; \frac{\cos(2x)}{2} + \frac{1}{2}\right) \frac{1}{\sqrt{1 - \cos(2x)}} + \right.$$

2.1431 ODE No. 1431

$$y''(x) = \cot(2x)y'(x) - 2y(x)$$

✓ **Mathematica** : cpu = 0.186659 (sec), leaf count = 80

$$\left\{ \left\{ y(x) \rightarrow c_1 \left(\cos^2(x) - \frac{1}{2} \right) - \frac{2}{3} c_2 \cos^{\frac{3}{2}}(x) \left(2 \cos^2(x) {}_2F_1\left(\frac{1}{4}, \frac{3}{4}; \frac{7}{4}; \cos^2(x)\right) - {}_2F_1\left(\frac{1}{4}, \frac{3}{4}; \frac{7}{4}; \cos^2(x)\right) \right) \right\} \right.$$

✓ **Maple** : cpu = 0.405 (sec), leaf count = 35

$$\left\{ y(x) = _C1 (\sin(2x))^{\frac{3}{4}} \text{LegendreP}\left(\frac{1}{4}, \frac{3}{4}, \cos(2x)\right) + _C2 (\sin(2x))^{\frac{3}{4}} \text{LegendreQ}\left(\frac{1}{4}, \frac{3}{4}, \cos(2x)\right) \right\}$$

2.1432 ODE No. 1432

$$y''(x) = -\cot(x)y'(x) - \frac{1}{4}y(x) (-17 \sin^2(x) - 1) \csc^2(x)$$

✓ **Mathematica** : cpu = 0.0890356 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-2x}}{\sqrt{\sin(x)}} + \frac{c_2 e^{2x}}{4\sqrt{\sin(x)}} \right\} \right\}$$

✓ **Maple** : cpu = 0.044 (sec), leaf count = 25

$$\left\{ y(x) = _C1 \sinh(2x) \frac{1}{\sqrt{\sin(x)}} + _C2 \cosh(2x) \frac{1}{\sqrt{\sin(x)}} \right\}$$

2.1433 ODE No. 1433

$$y''(x) = -\frac{y(x) \sec^2(x) (2x^2 + x^2 \sin^2(x) - 24 \cos^2(x))}{4x^2} - \tan(x)y'(x) + \sqrt{\cos(x)}$$

✓ **Mathematica** : cpu = 0.200507 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{5}c_2x^3\sqrt{\cos(x)} + \frac{c_1\sqrt{\cos(x)}}{x^2} - \frac{1}{4}x^2\sqrt{\cos(x)} \right\} \right\}$$

✓ **Maple** : cpu = 0.119 (sec), leaf count = 32

$$\left\{ y(x) = \frac{C2}{x^2} \sqrt{\cos(x)} + \sqrt{\cos(x)}x^3 - C1 - \frac{x^2}{4} \sqrt{\cos(x)} \right\}$$

2.1434 ODE No. 1434

$$y''(x) = -\frac{b \cot(x)y'(x)}{a} - \frac{y(x) \csc^2(x) (c \cos^2(x) + d \cos(x) + e)}{a}$$

✓ **Mathematica** : cpu = 108.524 (sec), leaf count = 1596424

Too large to display

✓ **Maple** : cpu = 1.724 (sec), leaf count = 559

$$\left\{ y(x) = -C1 (\sin(x))^{-\frac{a+b}{2a}} (\cos(x) + 1)^{\frac{1}{4a} (2a + \sqrt{a^2 + (-2b-4c-4d-4e)a+b^2})} (\cos(x) - 1)^{-\frac{1}{4a} (-2a + \sqrt{a^2 + (-2b-4c-4d-4e)a+b^2})} \right\}$$

2.1435 ODE No. 1435

$$y''(x) = -4y(x) \sin(3x) \csc^3(x)$$

✓ **Mathematica** : cpu = 0.153746 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt[4]{\cos^2(x) - 1} P_{-\frac{1}{2}+4i}^{\frac{i\sqrt{47}}{2}}(\cos(x)) + c_2 \sqrt[4]{\cos^2(x) - 1} Q_{-\frac{1}{2}+4i}^{\frac{i\sqrt{47}}{2}}(\cos(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.146 (sec), leaf count = 41

$$\left\{ y(x) = -C1 \sqrt{\sin(x)} \text{LegendreP}\left(-\frac{1}{2} + 4i, \frac{i}{2} \sqrt{47}, \cos(x)\right) + -C2 \sqrt{\sin(x)} \text{LegendreQ}\left(-\frac{1}{2} + 4i, \frac{i}{2} \sqrt{47}, \cos(x)\right) \right\}$$

2.1436 ODE No. 1436

$$y''(x) = -\frac{1}{4}y(x) \csc^2(x) (-4n^2 + 4v(v+1) \sin^2(x) - \cos^2(x) + 2)$$

✓ **Mathematica** : cpu = 0.543398 (sec), leaf count = 42

$$\left\{ \left\{ y(x) \rightarrow c_1 \sqrt[4]{\cos^2(x) - 1} P_v^n(\cos(x)) + c_2 \sqrt[4]{\cos^2(x) - 1} Q_v^n(\cos(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.27 (sec), leaf count = 140

$$\left\{ y(x) = _C1 \sqrt[4]{2 \cos(2x) + 2} {}_2F_1\left(-\frac{v}{2} + \frac{n}{2}, \frac{1}{2} + \frac{v}{2} + \frac{n}{2}; \frac{1}{2}; \frac{\cos(2x)}{2} + \frac{1}{2}\right) \sqrt{-2 \cos(2x) + 2} \left(\frac{\cos(2x)}{2} - \frac{1}{2}\right) \right\}$$

2.1437 ODE No. 1437

$$y''(x) = (3 \sin^2(x) + 1) \csc(x) \sec(x) y'(x) + y(x) \tan^2(x)$$

✓ **Mathematica** : cpu = 0.282034 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow c_1 \cos^{\frac{\sqrt{13}}{2} - \frac{3}{2}}(x) + c_2 \cos^{-\frac{3}{2} - \frac{\sqrt{13}}{2}}(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.172 (sec), leaf count = 29

$$\left\{ y(x) = _C1 (\cos(x))^{-\frac{3}{2} + \frac{\sqrt{13}}{2}} + _C2 (\cos(x))^{-\frac{3}{2} - \frac{\sqrt{13}}{2}} \right\}$$

2.1438 ODE No. 1438

$$y''(x) = y(x) (-\csc^2(x)) \sec^2(x) (-a \sin^2(x) \cos^2(x) - (m-1)m \sin^2(x) - (n-1)n \cos^2(x))$$

✓ **Mathematica** : cpu = 0.974721 (sec), leaf count = 615

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 (-1)^{\frac{1}{2}(-2m-1)+1} \cos^2(x)^{\frac{1}{4}(-2m-1)+1} (\cos^2(x) - 1)^{\frac{1}{2} \left(\frac{4am+4\sqrt{-an^2+4an-4\sqrt{-an}+4(-a)^{3/2}+8\sqrt{-aa+\sqrt{-a+4mn}}}{8a+8n^2-8n+2} \right)}}{1} \right\} \right\}$$

✓ **Maple** : cpu = 0.229 (sec), leaf count = 105

$$\left\{ y(x) = _C1 (\cos(x))^m (\sin(x))^n {}_2F_1\left(\frac{n}{2} + \frac{m}{2} + \frac{i}{2}\sqrt{a}, \frac{n}{2} + \frac{m}{2} - \frac{i}{2}\sqrt{a}; m + \frac{1}{2}; (\cos(x))^2\right) + _C2 (\cos(x))^m (\sin(x))^n {}_2F_1\left(\frac{n}{2} + \frac{m}{2} - \frac{i}{2}\sqrt{a}, \frac{n}{2} + \frac{m}{2} + \frac{i}{2}\sqrt{a}; m + \frac{1}{2}; (\cos(x))^2\right) \right\}$$

2.1439 ODE No. 1439

$$y''(x) = \frac{\phi'(x)y'(x)}{\phi(x) - \phi(a)} - \frac{y(x)(\phi''(a) - n(n+1)(\phi(x) - \phi(a))^2)}{\phi(x) - \phi(a)}$$

✗ **Mathematica** : cpu = 0.819674 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[2][y][x] == (Derivative[1][phi][x]*Derivative[1][y][x])/(-phi[a] + phi[x]) - (y[x]*(-(n*(1 + n)*(-phi[a] + phi[x])^2) + Derivative[2][phi][a]))/(phi[a] + phi[x]), y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^2}{dx^2} Y(x) - \frac{\left(\frac{d}{dx}\phi(x)\right) \frac{d}{dx} Y(x)}{\phi(x) - \phi(a)} + \frac{\left(-n(n+1)(\phi(x) - \phi(a))^2 + \frac{d^2}{da^2}\phi(a)\right) Y(x)}{\phi(x) - \phi(a)} \right\} \right) \right\}$$

2.1440 ODE No. 1440

$$y''(x) = -\frac{y'(x)(-\phi''(x) - \phi(x)\phi'(x) + \phi(x^3))}{\phi'(x) + \phi(x)^2} - \frac{y(x)(-\phi(x)\phi''(x) + \phi(x)^2(-\phi'(x)) + \phi'(x)^2)}{\phi'(x) + \phi(x)^2}$$

✗ **Mathematica** : cpu = 0.871801 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[2][y][x] == -((Derivative[1][y][x]*(phi[x]^3 - phi[x]*Derivative[1][phi][x]) + Derivative[1][phi][x]^2 - phi[x]*Derivative[2][phi][x]))/(phi[x]^2*Derivative[1][phi][x]) + Derivative[1][phi][x]^2 - phi[x]*Derivative[2][phi][x]), y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{\left(\left(\frac{d}{dx}\phi(x)\right)^2 - (\phi(x))^2 \frac{d}{dx}\phi(x) - \phi(x) \frac{d^2}{dx^2}\phi(x)\right) Y(x)}{\frac{d}{dx}\phi(x) + (\phi(x))^2} + \frac{\left(\phi(x^3) - \phi(x) \frac{d}{dx}\phi(x) - \frac{d^2}{dx^2}\phi(x)\right) Y(x)}{\frac{d}{dx}\phi(x) + (\phi(x))^2} \right\} \right) \right\}$$

2.1441 ODE No. 1441

$$y''(x) = -\frac{y'(x)(-cn(x|k)dn(x|k) - 2sn(x|k))}{sn(x|k)^2 - sn(a|k)^2} - \frac{y(x)(6k^2sn(a|k)^4 - 4(k^2 + 1)sn(a|k)^2 + 2)}{sn(x|k)^2 - sn(a|k)^2} - \frac{1}{sn(x|k)^2 - sn(a|k)^2}$$

✗ **Mathematica** : cpu = 1.50572 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[2][y][x] == -(-JacobiSN[a, k]^2 + JacobiSN[x, k]^2)^(-1) - ((2 - 4*(1 + k^2)*JacobiSN[a, k]^2 + 6*k^2*JacobiSN[a, k]^4)*y[x])/(-JacobiSN[a, k]^2 + JacobiSN[x, k]^2) - ((-JacobiCN[x, k]*JacobiDN[x, k]) - 2*JacobiSN[a, k]^2 + JacobiSN[x, k]^2), y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^2}{dx^2} Y(x) - 2 \frac{JacobiSN(x, k) JacobiCN(x, k) JacobiDN(x, k) \frac{d}{dx} Y(x)}{(JacobiSN(x, k))^2 - JacobiSN(a, k)} - \frac{(-2 + 4)}{\dots} \right\} \right) \right.$$

2.1442 ODE No. 1442

$$y''(x) = \frac{y(x)}{f(x)} - \frac{xy'(x)}{f(x)}$$

✗ **Mathematica** : cpu = 0.208023 (sec), leaf count = 0 , could not solve

DSolve[Derivative[2][y][x] == y[x]/f[x] - (x*Derivative[1][y][x])/f[x], y[x], x]

✓ **Maple** : cpu = 0.088 (sec), leaf count = 31

$$\left\{ y(x) = -C1 \int e^{\int \frac{1}{x} (-2 - \frac{x^2}{f(x)}) dx} dx + -C2 x \right\}$$

2.1443 ODE No. 1443

$$y''(x) = -\frac{f'(x)y'(x)}{2f(x)} - \frac{g(x)y(x)}{f(x)}$$

✗ **Mathematica** : cpu = 0.271215 (sec), leaf count = 0 , could not solve

DSolve[Derivative[2][y][x] == -(g[x]*y[x])/f[x] - (Derivative[1][f][x]*Derivative[1][y][x])/f[x], y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{g(x) Y(x)}{f(x)} + \frac{(\frac{d}{dx} f(x)) \frac{d}{dx} Y(x)}{2 f(x)} + \frac{d^2}{dx^2} Y(x) \right\}, \{ -Y(x) \} \right) \right\}$$

2.1444 ODE No. 1444

$$y''(x) = -by(x)f(x)^{2a} - \frac{af'(x)y'(x)}{f(x)}$$

✗ **Mathematica** : cpu = 1.48505 (sec), leaf count = 0 , could not solve

DSolve[Derivative[2][y][x] == -(b*f[x]^(2*a)*y[x]) - (a*Derivative[1][f][x]*Derivative[1][y][x])/f[x], y[x], x]

✓ **Maple** : cpu = 0.04 (sec), leaf count = 37

$$\left\{ y(x) = -C1 e^{\int i(f(x))^a \sqrt{b} dx} + -C2 e^{-\int i(f(x))^a \sqrt{b} dx} \right\}$$

2.1445 ODE No. 1445

$$y''(x) = -\frac{y'(x)(2f(x)g(x)g'(x)^2 - (g(x)^2 - 1)(2f'(x)g'(x) + f(x)g''(x))) - y(x)((g(x)^2 - 1)(f'(x)(2f'(x)g'(x) + f(x)g''(x)) - f(x)(g(x)^2 - 1)g'(x))}{f(x)(g(x)^2 - 1)g'(x)}$$

✗ **Mathematica** : cpu = 1.30183 (sec), leaf count = 0 , could not solve

```
DSolve[Derivative[2][y][x] == -((Derivative[1][y][x]*(2*f[x]*g[x]*Derivative[1][g][x]^2 + g[x]^2)*(2*Derivative[1][f][x]*Derivative[1][g][x] + f[x]*Derivative[2][g][x]))/(1 + g[x]^2)*Derivative[1][g][x]) - (y[x]*(-(f[x]*Derivative[1][g][x]^2*(2*g[x]*Derivative[1][f][x] + f[x]*Derivative[2][f][x]) + Derivative[1][f][x]*(2*g[x]*Derivative[1][g][x]) - f[x]*Derivative[2][f][x])) + Derivative[1][f][x]*(2*g[x]*Derivative[1][g][x]) - f[x]*Derivative[2][f][x]), y[x], x]
```

✓ **Maple** : cpu = 0.227 (sec), leaf count = 21

$$\{y(x) = _C1 \text{LegendreP}(v, g(x)) f(x) + _C2 \text{LegendreQ}(v, g(x)) f(x)\}$$

2.1446 ODE No. 1446

$$y''(x) = -\frac{(x-1)y(x)}{x^4} - \frac{y'(x)}{x}$$

✓ **Mathematica** : cpu = 0.0236321 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-1/x} - c_2 e^{-1/x} \text{Ei}\left(\frac{2}{x}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.046 (sec), leaf count = 28

$$\{y(x) = _C1 e^{-x^{-1}} + _C2 e^{-x^{-1}} \text{Ei}(1, -2x^{-1})\}$$

2.1447 ODE No. 1447

$$y''(x) = -\frac{(-x-1)y(x)}{x^4} - \frac{y'(x)}{x}$$

✓ **Mathematica** : cpu = 0.0215144 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{1}{x}} - c_2 e^{\frac{1}{x}} \text{Ei}\left(-\frac{2}{x}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.048 (sec), leaf count = 24

$$\{y(x) = _C1 e^{x^{-1}} + _C2 e^{x^{-1}} \text{Ei}(1, 2x^{-1})\}$$

2.1448 ODE No. 1448

$$y''(x) = -\frac{b^2 y(x)}{(x^2 - a^2)^2}$$

✓ **Mathematica** : cpu = 0.329764 (sec), leaf count = 149

$$\left\{ \left\{ y(x) \rightarrow c_1(x-a)^{\frac{1}{2}} \sqrt{1-\frac{b^2}{a^2}} + \frac{1}{2}(a+x)^{\frac{1}{2}-\frac{1}{2}} \sqrt{1-\frac{b^2}{a^2}} - \frac{c_2(x-a)^{\frac{1}{2}-\frac{1}{2}} \sqrt{\frac{a^2-b^2}{a^2}} (a+x)^{\frac{1}{2}} \sqrt{\frac{a^2-b^2}{a^2} + \frac{1}{2}}}{2a \sqrt{\frac{a^2-b^2}{a^2}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.109 (sec), leaf count = 87

$$\left\{ y(x) = _C1 \sqrt{(a-x)(x+a)} \left(\frac{a-x}{x+a} \right)^{\frac{1}{2a} \sqrt{a^2-b^2}} + _C2 \sqrt{(a-x)(x+a)} \left(\frac{a-x}{x+a} \right)^{-\frac{1}{2a} \sqrt{a^2-b^2}} \right\}$$

2.1449 ODE No. 1449

$$y^{(3)}(x) - \lambda y(x) = 0$$

✓ **Mathematica** : cpu = 0.022979 (sec), leaf count = 53

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{(-1)^{2/3} \sqrt[3]{\lambda} x} + c_2 e^{-\sqrt[3]{-1} \sqrt[3]{\lambda} x} + c_3 e^{\sqrt[3]{\lambda} x} \right\} \right\}$$

✓ **Maple** : cpu = 0.037 (sec), leaf count = 53

$$\left\{ y(x) = _C1 e^{(-\frac{1}{2} \sqrt[3]{\lambda} - \frac{i}{2} \sqrt{3} \sqrt[3]{\lambda}) x} + _C2 e^{(-\frac{1}{2} \sqrt[3]{\lambda} + \frac{i}{2} \sqrt{3} \sqrt[3]{\lambda}) x} + _C3 e^{\sqrt[3]{\lambda} x} \right\}$$

2.1450 ODE No. 1450

$$ax^3 y(x) - bx + y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 300.008 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.363 (sec), leaf count = 2294

$$\left\{ y(x) = \int 1401400 b x^3 \left(8 x {}_0F_2 \left(; \frac{11}{6}, \frac{13}{6}; -\frac{x^6 a}{216} \right) {}_0F_2 \left(; 7/6, 4/3; -\frac{x^6 a}{216} \right) - 5 {}_0F_2 \left(; 5/6, 7/6; -\frac{x^6 a}{216} \right) x^6 \right. \right.$$

2.1451 ODE No. 1451

$$y^{(3)}(x) - ax^b y(x) = 0$$

✓ **Mathematica** : cpu = 0.0213554 (sec), leaf count = 168

$$\left\{ \left\{ y(x) \rightarrow (-1)^{\frac{1}{b+3}} (b+3)^{-\frac{3}{b+3}} c_2 x a^{\frac{1}{b+3}} {}_0F_2 \left(; 1 - \frac{1}{b+3}, 1 + \frac{1}{b+3}; \frac{ax^{b+3}}{(b+3)^3} \right) + (-1)^{\frac{2}{b+3}} (b+3)^{-\frac{6}{b+3}} c_3 x^2 a^{\frac{2}{b+3}} \right. \right.$$

✓ **Maple** : cpu = 0.125 (sec), leaf count = 114

$$\left. \left\{ y(x) = _C1 {}_0F_2 \left(; \frac{b+1}{b+3}, \frac{b+2}{b+3}; \frac{x^{b+3} a}{(b+3)^3} \right) + _C2 x {}_0F_2 \left(; \frac{b+2}{b+3}, \frac{b+4}{b+3}; \frac{x^{b+3} a}{(b+3)^3} \right) + _C3 x^2 {}_0F_2 \left(; \frac{b+5}{b+3}, \frac{b+6}{b+3}; \frac{x^{b+3} a}{(b+3)^3} \right) \right\}$$

2.1452 ODE No. 1452

$$y^{(3)}(x) + 3y'(x) - 4y(x) = 0$$

✓ **Mathematica** : cpu = 0.00774169 (sec), leaf count = 54

$$\left\{ \left\{ y(x) \rightarrow c_3 e^x + c_1 e^{-x/2} \sin \left(\frac{\sqrt{15}x}{2} \right) + c_2 e^{-x/2} \cos \left(\frac{\sqrt{15}x}{2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 35

$$\left\{ y(x) = _C1 e^x + _C2 e^{-\frac{x}{2}} \sin \left(\frac{\sqrt{15}x}{2} \right) + _C3 e^{-\frac{x}{2}} \cos \left(\frac{\sqrt{15}x}{2} \right) \right\}$$

2.1453 ODE No. 1453

$$a^2(-y'(x)) - e^{2ax} \sin^2(x) + y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.608466 (sec), leaf count = 128

$$\left\{ \left\{ y(x) \rightarrow \frac{e^{-ax}(-9(a^2 - 4)a^4 e^{3ax} \cos(2x) - 3(11a^2 - 4)a^3 e^{3ax} \sin(2x) + (9a^6 + 49a^4 + 56a^2 + 16)(12a^2 - 4)e^{3ax}}{12a^3(9a^6 + 49a^4 + 56a^2 + 16)} \right. \right.$$

✓ **Maple** : cpu = 0.153 (sec), leaf count = 230

$$\left. \left\{ y(x) = \frac{-108 e^{-ax} _C2 a^8 + 108 e^{ax} _C1 a^8 + 108 _C3 a^9 - 9 a^6 e^{2ax} \cos(2x) - 588 e^{-ax} _C2 a^6 + 588 e^{ax} _C3 a^6}{12 a^3 (9 a^6 + 49 a^4 + 56 a^2 + 16)} \right\}$$

2.1454 ODE No. 1454

$$2axy'(x) + ay(x) + y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.0103284 (sec), leaf count = 79

$$\left\{ \left\{ y(x) \rightarrow c_1 \text{Ai} \left(\sqrt[3]{-\frac{1}{2} \sqrt[3]{ax}} \right)^2 + c_3 \text{Bi} \left(\sqrt[3]{-\frac{1}{2} \sqrt[3]{ax}} \right)^2 + c_2 \text{Ai} \left(\sqrt[3]{-\frac{1}{2} \sqrt[3]{ax}} \right) \text{Bi} \left(\sqrt[3]{-\frac{1}{2} \sqrt[3]{ax}} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.056 (sec), leaf count = 55

$$\left\{ y(x) = -C1 \left(\text{Ai} \left(-\frac{2^{\frac{2}{3}}x}{2} \sqrt[3]{a} \right) \right)^2 + -C2 \left(\text{Bi} \left(-\frac{2^{\frac{2}{3}}x}{2} \sqrt[3]{a} \right) \right)^2 + -C3 \text{Ai} \left(-\frac{2^{\frac{2}{3}}x}{2} \sqrt[3]{a} \right) \text{Bi} \left(-\frac{2^{\frac{2}{3}}x}{2} \sqrt[3]{a} \right) \right\}$$

2.1455 ODE No. 1455

$$x(a+b-1)y'(x) - aby(x) + x^2(-y''(x)) + y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.027677 (sec), leaf count = 127

$$\left\{ \left\{ y(x) \rightarrow \sqrt[3]{-\frac{1}{3}} c_2 x {}_2F_2 \left(\frac{1}{3} - \frac{a}{3}, \frac{1}{3} - \frac{b}{3}; \frac{2}{3}, \frac{4}{3}; \frac{x^3}{3} \right) + c_1 {}_2F_2 \left(-\frac{a}{3}, -\frac{b}{3}; \frac{1}{3}, \frac{2}{3}; \frac{x^3}{3} \right) + \left(-\frac{1}{3} \right)^{2/3} c_3 x^2 {}_2F_2 \left(\frac{2}{3}, \frac{4}{3}; \frac{1}{3}, \frac{2}{3}; \frac{x^3}{3} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.152 (sec), leaf count = 71

$$\left\{ y(x) = -C1 {}_2F_2 \left(-\frac{a}{3}, -\frac{b}{3}; \frac{1}{3}, \frac{2}{3}; \frac{x^3}{3} \right) + -C2 x {}_2F_2 \left(\frac{1}{3} - \frac{a}{3}, \frac{1}{3} - \frac{b}{3}; \frac{2}{3}, \frac{4}{3}; \frac{x^3}{3} \right) + -C3 x^2 {}_2F_2 \left(-\frac{a}{3} + \frac{2}{3}, -\frac{b}{3} + \frac{2}{3}; \frac{1}{3}, \frac{2}{3}; \frac{x^3}{3} \right) \right\}$$

2.1456 ODE No. 1456

$$x^{2c-2}y'(x) + (c-1)x^{2c-3}y(x) + y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.0350123 (sec), leaf count = 183

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_1F_2 \left(\frac{1}{2} - \frac{1}{2c}; 1 - \frac{1}{c}, 1 - \frac{1}{2c}; -\frac{x^{2c}}{4c^2} \right) + 4^{-1/c} c_3 c^{-2/c} (x^{2c})^{\frac{1}{c}} {}_1F_2 \left(\frac{1}{2} + \frac{1}{2c}; 1 + \frac{1}{2c}, 1 + \frac{1}{c}; -\frac{x^{2c}}{4c^2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.062 (sec), leaf count = 74

$$\left\{ y(x) = -C1 x \left(J_{\frac{1}{2c}} \left(\frac{x^c}{2c} \right) \right)^2 + -C2 x \left(Y_{\frac{1}{2c}} \left(\frac{x^c}{2c} \right) \right)^2 + -C3 x J_{\frac{1}{2c}} \left(\frac{x^c}{2c} \right) Y_{\frac{1}{2c}} \left(\frac{x^c}{2c} \right) \right\}$$

2.1457 ODE No. 1457

$$-3y'(x)(a + 2\wp(x; g2, g3)) + by(x) + y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.0377303 (sec), leaf count = 0 , could not solve

DSolve[b*y[x] - 3*(a + 2*WeierstrassP[x, {g2, g3}])*Derivative[1][y][x] + Derivative[3][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^3}{dx^3} Y(x) + (-6 \text{WeierstrassP}(x, g2, g3) - 3a) \frac{d}{dx} Y(x) + b Y(x) \right\}, \{ -Y(x) \} \right) \right\}$$

2.1458 ODE No. 1458

$$\frac{1}{2}y(x) ((1 - n^2) \wp'(x; g2, g3) - a) + (1 - n^2) y'(x) \wp(x; g2, g3) + y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.0190531 (sec), leaf count = 0 , could not solve

DSolve[((-a + (1 - n^2)*WeierstrassPPrime[x, {g2, g3}])*y[x])/2 + (1 - n^2)*WeierstrassP[x, {g2, g3}]*y'[x] + y[x]^(3) == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^3}{dx^3} Y(x) + (-\text{WeierstrassP}(x, g2, g3) n^2 + \text{WeierstrassP}(x, g2, g3)) \frac{d}{dx} Y(x) + \right. \right. \right.$$

2.1459 ODE No. 1459

$$-y'(x)(a + 4n(n + 1)\wp(x; g2, g3)) - 2n(n + 1)y(x)\wp'(x; g2, g3) + y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.0189699 (sec), leaf count = 0 , could not solve

DSolve[-2*n*(1 + n)*WeierstrassPPrime[x, {g2, g3}]*y[x] - (a + 4*n*(1 + n)*WeierstrassP[x, {g2, g3}])*y'[x] + y[x]^(3) == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \left(DESol \left(\left\{ \frac{d^2}{dx^2} Y(x) + \left(-\text{WeierstrassP}(x, g2, g3) n^2 - n \text{WeierstrassP}(x, g2, g3) - \frac{a}{4} \right) Y(x) \right\} \right) \right) \right.$$

2.1460 ODE No. 1460

$$y'(x)(a + A\wp(x; g2, g3)) + By(x)\wp'(x; g2, g3) + y^{(3)}(x) = 0$$

✘ **Mathematica** : cpu = 0.0134806 (sec), leaf count = 0 , could not solve

DSolve[B*WeierstrassPPrime[x, {g2, g3}]*y[x] + (a + A*WeierstrassP[x, {g2, g3}])*Deriv

✘ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^3}{dx^3} Y(x) + (A WeierstrassP(x, g2, g3) + a) \frac{d}{dx} Y(x) + B WeierstrassPPrime(x, g2, g3) y(x) \right\} \right) \right\}$$

2.1461 ODE No. 1461

$$-y'(x)(a + 3k^2 \operatorname{sn}(z|x)^2) + y(x)(b + c \operatorname{sn}(z|x)^2 - 3k^2 \operatorname{cn}(z|x) \operatorname{dn}(z|x) \operatorname{sn}(z|x)) + y^{(3)}(x) = 0$$

✘ **Mathematica** : cpu = 0.0300446 (sec), leaf count = 0 , could not solve

DSolve[(b - 3*k^2*JacobiCN[z, x]*JacobiDN[z, x]*JacobiSN[z, x] + c*JacobiSN[z, x]^2)*y

✘ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^3}{dx^3} Y(x) + (-3k^2(\operatorname{JacobiSN}(z, x))^2 - a) \frac{d}{dx} Y(x) + (b + c(\operatorname{JacobiSN}(z, x))^2 - 3k^2 \operatorname{cn}(z|x) \operatorname{dn}(z|x) \operatorname{sn}(z|x)) Y(x) \right\} \right) \right\}$$

2.1462 ODE No. 1462

$$-y'(x)(a + 6k^2 \sin^2(x)) + by(x) + y^{(3)}(x) = 0$$

✘ **Mathematica** : cpu = 0.0224501 (sec), leaf count = 0 , could not solve

DSolve[b*y[x] - (a + 6*k^2*Sin[x]^2)*Derivative[1][y][x] + Derivative[3][y][x] == 0, y

✘ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^3}{dx^3} Y(x) + (-6k^2(\sin(x))^2 - a) \frac{d}{dx} Y(x) + b Y(x) \right\}, \{ Y(x) \} \right) \right\}$$

2.1463 ODE No. 1463

$$y(x)f'(x) + 2f(x)y'(x) + y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.0653862 (sec), leaf count = 0 , could not solve

`DSolve[y[x]*Derivative[1][f][x] + 2*f[x]*Derivative[1][y][x] + Derivative[3][y][x] ==`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \left(DESol \left(\left\{ \frac{d^2}{dx^2} Y(x) + \frac{f(x) - Y(x)}{2} \right\}, \{ -Y(x) \} \right) \right)^2 \right\}$$

2.1464 ODE No. 1464

$$y^{(3)}(x) - 2y''(x) - 3y'(x) + 10y(x) = 0$$

✓ **Mathematica** : cpu = 0.00617857 (sec), leaf count = 34

$$\{ \{ y(x) \rightarrow c_3 e^{-2x} + c_1 e^{2x} \sin(x) + c_2 e^{2x} \cos(x) \} \}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 27

$$\{ y(x) = _C1 e^{-2x} + _C2 e^{2x} \sin(x) + _C3 e^{2x} \cos(x) \}$$

2.1465 ODE No. 1465

$$-a^2 y'(x) + 2a^2 y(x) + y^{(3)}(x) - 2y''(x) - \sinh(x) = 0$$

✓ **Mathematica** : cpu = 0.086237 (sec), leaf count = 95

$$\left\{ \left\{ y(x) \rightarrow \frac{e^{-x}(3a^2 e^{2x} - a^2 - 3e^{2x} - 12e^x \sinh(x) - 6e^x \cosh(x) + 1)}{6(a-2)(a+2)(a^2-1)} + c_1 e^{-ax} + c_3 e^{ax} + c_2 e^{2x} \right\} \right\}$$

✓ **Maple** : cpu = 0.089 (sec), leaf count = 467

$$\left\{ y(x) = -\frac{-2e^{2x} \cosh(3x)a - 9e^{ax} \sinh((a-1)x)a - 3e^{ax} \cosh((a+1)x)a + 9e^{ax} \cosh((a-1)x)a}{6(a-2)(a+2)(a^2-1)} \right\}$$

2.1466 ODE No. 1466

$$a^3(-y(x)) + 3a^2y'(x) - 3ay''(x) - e^{ax} + y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.0165729 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow c_3 x^2 e^{ax} + c_2 x e^{ax} + c_1 e^{ax} + \frac{1}{6} x^3 e^{ax} \right\} \right\}$$

✓ **Maple** : cpu = 0.02 (sec), leaf count = 36

$$\left\{ y(x) = \frac{x^3 e^{ax}}{6} + _C1 e^{ax} + _C2 e^{ax} x + _C3 e^{ax} x^2 \right\}$$

2.1467 ODE No. 1467

$$a_0 y(x) + a_1 y'(x) + a_2 y''(x) + y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.00608354 (sec), leaf count = 84

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{x \text{Root}[\#1^3 + \#1^2 a_2 + \#1 a_1 + a_0 \&, 1]} + c_2 e^{x \text{Root}[\#1^3 + \#1^2 a_2 + \#1 a_1 + a_0 \&, 2]} + c_3 e^{x \text{Root}[\#1^3 + \#1^2 a_2 + \#1 a_1 + a_0 \&, 3]} \right\} \right\}$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 644

$$\left\{ y(x) = _C1 e^{-\frac{x}{12} \left(i \left(36 a_1 a_2 - 108 a_0 - 8 a_2^3 + 12 \sqrt{12 a_0 a_2^3 - 3 a_1^2 a_2^2 - 54 a_1 a_2 a_0 + 12 a_1^3 + 81 a_0^2} \right)^{\frac{2}{3}} \sqrt{3} - 4 i \sqrt{3} a_2^2 + 12 i \sqrt{3} a_1 + \dots \right)} \right\}$$

2.1468 ODE No. 1468

$$2(2a + 4x^2 - 1) y'(x) - 8axy(x) + y^{(3)}(x) - 6xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0856028 (sec), leaf count = 57

$$\left\{ \left\{ y(x) \rightarrow c_2 H_{\frac{a}{2}}(x) {}_1F_1\left(-\frac{a}{4}; \frac{1}{2}; x^2\right) + c_1 H_{\frac{a}{2}}(x)^2 + c_3 {}_1F_1\left(-\frac{a}{4}; \frac{1}{2}; x^2\right)^2 \right\} \right\}$$

✓ **Maple** : cpu = 0.138 (sec), leaf count = 64

$$\left\{ y(x) = _C1 \left(M\left(\frac{1}{2} - \frac{a}{4}, \frac{3}{2}, x^2\right) \right)^2 x^2 + _C2 \left(U\left(\frac{1}{2} - \frac{a}{4}, \frac{3}{2}, x^2\right) \right)^2 x^2 + _C3 M\left(\frac{1}{2} - \frac{a}{4}, \frac{3}{2}, x^2\right) x^2 \right\}$$

2.1469 ODE No. 1469

$$a^3 x^3 y(x) + 3a^2 x^2 y'(x) + 3axy''(x) + y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.0277036 (sec), leaf count = 72

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-\frac{ax^2}{2}} + c_2 e^{-\frac{ax^2}{2} - \sqrt{3}\sqrt{ax}} + c_3 e^{\sqrt{3}\sqrt{ax} - \frac{ax^2}{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.028 (sec), leaf count = 37

$$\left\{ y(x) = e^{-\frac{ax^2}{2}} \left(_C1 + _C2 e^{\sqrt{3}\sqrt{ax}} + _C3 e^{-\sqrt{3}\sqrt{ax}} \right) \right\}$$

2.1470 ODE No. 1470

$$y^{(3)}(x) - \sin(x)y''(x) - 2\cos(x)y'(x) + y(x)\sin(x) - \log(x) = 0$$

✗ **Mathematica** : cpu = 300.029 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.098 (sec), leaf count = 36

$$\left\{ y(x) = \left(_C3 + \int \left(2_C1 x + _C2 + \frac{x^2 \ln(x)}{2} - \frac{3x^2}{4} \right) e^{\cos(x)} dx \right) e^{-\cos(x)} \right\}$$

2.1471 ODE No. 1471

$$f(x)y''(x) + f(x)y(x) + y^{(3)}(x) + y'(x) = 0$$

✗ **Mathematica** : cpu = 0.0777184 (sec), leaf count = 0 , could not solve

DSolve[f[x]*y[x] + Derivative[1][y][x] + f[x]*Derivative[2][y][x] + Derivative[3][y][x]

✓ **Maple** : cpu = 0.21 (sec), leaf count = 36

$$\left\{ y(x) = e^{ix} \left(\int e^{-2ix} \left(\int _C3 e^{i-f(x)} dx + _C2 \right) dx + _C1 \right) \right\}$$

2.1472 ODE No. 1472

$$f(x) (x^2 y''(x) - 2xy'(x) + 2y(x)) + y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.0792719 (sec), leaf count = 0 , could not solve

DSolve[f[x]*(2*y[x] - 2*x*Derivative[1][y][x] + x^2*Derivative[2][y][x]) + Derivative[3][y][x]]

✓ **Maple** : cpu = 0.308 (sec), leaf count = 33

$$\left\{ y(x) = \left(\int -C1 + -C2 \int e^{-\int x^2 f(x) + 3x^{-1} dx} dx dx + -C3 \right) x \right\}$$

2.1473 ODE No. 1473

$$y(x) (f(x)g(x) + g'(x)) + f(x)y''(x) + g(x)y'(x) + y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.013776 (sec), leaf count = 0 , could not solve

DSolve[y[x]*(f[x]*g[x] + Derivative[1][g][x]) + g[x]*Derivative[1][y][x] + f[x]*Derivative[2][y][x] + Derivative[3][y][x]]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^3}{dx^3} - Y(x) + f(x) \frac{d^2}{dx^2} - Y(x) + g(x) \frac{d}{dx} - Y(x) + \left(f(x)g(x) + \frac{d}{dx}g(x) \right) - Y(x) \right\}, \{ -Y(x) \} \right) \right\}$$

2.1474 ODE No. 1474

$$y'(x) (f'(x) + 2f(x)^2 + 4g(x)) + y(x) (4f(x)g(x) + 2g'(x)) + 3f(x)y''(x) + y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.0152175 (sec), leaf count = 0 , could not solve

DSolve[y[x]*(4*f[x]*g[x] + 2*Derivative[1][g][x]) + (2*f[x]^2 + 4*g[x] + Derivative[1][f][x])*y'[x] + 3*f[x]*Derivative[2][y][x] + Derivative[3][y][x]]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \left(DESol \left(\left\{ \frac{d^2}{dx^2} - Y(x) + f(x) \frac{d}{dx} - Y(x) + g(x) - Y(x) \right\}, \{ -Y(x) \} \right) \right)^2 \right\}$$

2.1475 ODE No. 1475

$$4y^{(3)}(x) - 8y''(x) - 11y'(x) - 3y(x) + 18e^x = 0$$

✓ **Mathematica** : cpu = 0.0234353 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{-x/2} + c_2 e^{-x/2} x + c_3 e^{3x} + e^x \right\} \right\}$$

✓ **Maple** : cpu = 0.021 (sec), leaf count = 26

$$\{y(x) = e^x + _C1 e^{3x} + _C2 e^{-\frac{x}{2}} + _C3 e^{-\frac{x}{2}} x\}$$

2.1476 ODE No. 1476

$$-36n^2 y'(x) \wp(x; g2, g3) - 2(n+3)(4n-3)ny(x)\phi'(x) + 27y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.125483 (sec), leaf count = 0 , could not solve

DSolve[-2*n*(3+n)*(-3+4*n)*y[x]*Derivative[1][phi][x] - 36*n^2*WeierstrassP[x, {g2, g3}], y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ 27 \frac{d^3}{dx^3} Y(x) - 36 \text{WeierstrassP}(x, g2, g3) n^2 \frac{d}{dx} Y(x) + (-8 \text{WeierstrassPPrime}(x, g2, g3)) Y(x) \right\} \right) \right\}$$

2.1477 ODE No. 1477

$$xy^{(3)}(x) + 3y''(x) + xy(x) = 0$$

✓ **Mathematica** : cpu = 0.162975 (sec), leaf count = 48

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-x}}{x} + \frac{c_2 e^{\sqrt[3]{-1}x}}{x} + \frac{c_3 e^{-(-1)^{2/3}x}}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.022 (sec), leaf count = 41

$$\left\{ y(x) = \frac{1}{x} \left(_C1 e^{-x} + _C2 e^{\frac{x}{2}} \sin \left(\frac{\sqrt{3}x}{2} \right) + _C3 e^{\frac{x}{2}} \cos \left(\frac{\sqrt{3}x}{2} \right) \right) \right\}$$

2.1478 ODE No. 1478

$$-ax^2y(x) + xy^{(3)}(x) + 3y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0330995 (sec), leaf count = 104

$$\left\{ \left\{ y(x) \rightarrow -\frac{2(-1)^{3/4}\sqrt{2}c_1{}_0F_2\left(\frac{1}{2}, \frac{3}{4}; \frac{ax^4}{64}\right)}{\sqrt[4]{ax}} + c_2{}_0F_2\left(\frac{3}{4}, \frac{5}{4}; \frac{ax^4}{64}\right) + \frac{\sqrt[4]{-1}\sqrt[4]{a}c_3x{}_0F_2\left(\frac{5}{4}, \frac{3}{2}; \frac{ax^4}{64}\right)}{2\sqrt{2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.135 (sec), leaf count = 48

$$\left\{ y(x) = {}_0F_2\left(\frac{3}{4}, \frac{5}{4}; \frac{ax^4}{64}\right) + \frac{C2}{x}{}_0F_2\left(\frac{1}{2}, \frac{3}{4}; \frac{ax^4}{64}\right) + {}_0F_2\left(\frac{5}{4}, \frac{3}{2}; \frac{ax^4}{64}\right) \right\}$$

2.1479 ODE No. 1479

$$(a+b)y''(x) - ay(x) + xy^{(3)}(x) - xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.139008 (sec), leaf count = 153

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2}ic_2x{}_1F_2\left(\frac{a}{2} + \frac{1}{2}, \frac{3}{2}, \frac{a}{2} + \frac{b}{2} + \frac{1}{2}; \frac{x^2}{4}\right) + c_1{}_1F_2\left(\frac{a}{2}; \frac{1}{2}, \frac{a}{2} + \frac{b}{2}; \frac{x^2}{4}\right) + c_3\left(\frac{i}{2}\right)^{-a-b+2}x^{-a-b+2}{}_1F_2\left(1 - \frac{b}{2}; \frac{1}{2}, \frac{3}{2}; \frac{x^2}{4}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.24 (sec), leaf count = 92

$$\left\{ y(x) = {}_1F_2\left(\frac{a}{2}; \frac{1}{2}, \frac{a}{2} + \frac{b}{2}; \frac{x^2}{4}\right) + {}_1F_2\left(\frac{a}{2} + \frac{1}{2}; \frac{3}{2}, \frac{a}{2} + \frac{b}{2} + \frac{1}{2}; \frac{x^2}{4}\right) + x^{-a-b+2}{}_1F_2\left(1 - \frac{b}{2}; \frac{1}{2}, \frac{3}{2}; \frac{x^2}{4}\right) \right\}$$

2.1480 ODE No. 1480

$$-(2v+x)y''(x) - (-2v+x-1)y'(x) + xy^{(3)}(x) + (x-1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.207549 (sec), leaf count = 93

$$\left\{ \left\{ y(x) \rightarrow \frac{c_3e^xx^{2v+2}\Gamma(v+\frac{3}{2}){}_1\tilde{F}_1(v+\frac{3}{2}; 2v+3; -2x)}{\Gamma(\frac{1}{2}-v)} + c_22^{-2v-2}e^xG_{2,3}^{2,1}\left(2x \left| \begin{matrix} 1, v+\frac{3}{2} \\ 1, 2(v+1), 0 \end{matrix} \right. \right) + c_1e^x \right\} \right\}$$

✓ **Maple** : cpu = 0.26 (sec), leaf count = 35

$$\left\{ y(x) = {}_0F_1\left(\frac{1}{2}; x\right) + {}_0F_1\left(v+1; x\right) + {}_0F_1\left(v+1; x\right) \right\}$$

2.1481 ODE No. 1481

$$-f(x) + (x^2 - 3)y''(x) + xy^{(3)}(x) + 4xy'(x) + 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.982754 (sec), leaf count = 431

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{240} e^{-\frac{x^2}{2}} \left(-240x^5 \left(\int_1^x \left(\frac{1}{15} \sqrt{\frac{\pi}{2}} K[1] \operatorname{erfi} \left(\frac{K[1]}{\sqrt{2}} \right) f(K[1]) - \frac{1}{240} \left(15 \operatorname{Ei} \left(\frac{K[1]^2}{2} \right) + 16 e^{\frac{K[1]^2}{2}} \right) \right) \right) \right. \right.$$

✓ **Maple** : cpu = 0.052 (sec), leaf count = 44

$$\left\{ y(x) = \left(-C3 + \int \frac{2-C1x + -C2 - \iint -f(x) dx dx}{x^6} e^{\frac{x^2}{2}} dx \right) e^{-\frac{x^2}{2}} x^5 \right\}$$

2.1482 ODE No. 1482

$$axy(x) - b + 2xy^{(3)}(x) + 3y''(x) = 0$$

✗ **Mathematica** : cpu = 300.028 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.395 (sec), leaf count = 2294

$$\left\{ y(x) = - \int 350350 bx \left(5x^3 {}_0F_2 \left(; \frac{13}{6}, 7/3; -\frac{ax^3}{54} \right) {}_0F_2 \left(; 5/6, 7/6; -\frac{ax^3}{54} \right) a - 8x^3 {}_0F_2 \left(; \frac{11}{6}, \frac{13}{6}; -\frac{ax^3}{54} \right) \right) dx \right\}$$

2.1483 ODE No. 1483

$$-4(\nu + x - 1)y''(x) + (6\nu + 2x - 5)y'(x) + (1 - 2\nu)y(x) + 2xy^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.146108 (sec), leaf count = 112

$$\left\{ \left\{ y(x) \rightarrow \frac{c_3 e^x x \Gamma \left(\frac{5}{2} - 3\nu \right) \left(\frac{{}_2F_1 \left(\frac{3}{2} - 3\nu; 1 - 2\nu; -x \right)}{3(2\nu - 1)x} + \frac{2}{3x\Gamma(2 - 2\nu)} \right)}{\Gamma \left(\frac{3}{2} - \nu \right)} + c_2 e^x G_{2,3}^{2,1} \left(x \left| \begin{matrix} 1, 3\nu - \frac{1}{2} \\ 1, 2\nu, 0 \end{matrix} \right. \right) + c_1 e^x \right\} \right\}$$

✓ **Maple** : cpu = 0.267 (sec), leaf count = 37

$$\left\{ y(x) = -C1 e^x + -C2 e^{\frac{x}{2}} x^\nu I_\nu \left(\frac{x}{2} \right) + -C3 e^{\frac{x}{2}} x^\nu K_\nu \left(\frac{x}{2} \right) \right\}$$

2.1484 ODE No. 1484

$$6y'(x)(ak + bx) + 3(2ax + k)y''(x) + y(x)(3bk + 2cx) + 2xy^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 63.2083 (sec), leaf count = 0 , DifferentialRoot result

$$\{ \{y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{(2xc + 3bk)y(x) + (6xb + 6ak)y'(x) + (6xa + 3k)y''(x) + 2xy^{(3)}(x) = 0\}) \}$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \text{DESol} \left(\left\{ (3bk + 2cx) _Y(x) + (6ak + 6bx) \frac{d}{dx} _Y(x) + (6ax + 3k) \frac{d^2}{dx^2} _Y(x) + 2x \frac{d^3}{dx^3} _Y(x) = 0 \right\} \right) \right\}$$

2.1485 ODE No. 1485

$$(x - 2)xy^{(3)}(x) - (x - 2)xy''(x) - 2y'(x) + 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.118979 (sec), leaf count = 66

$$\left\{ \left\{ y(x) \rightarrow -\frac{c_3(4e^x \text{Ei}(2 - x) - e^2(x^2 \log(2 - x) - x^2 \log(x) + 2x + 2))}{4e^2} + c_1x^2 + c_2e^x \right\} \right\}$$

✓ **Maple** : cpu = 0.401 (sec), leaf count = 47

$$\left\{ y(x) = _C1 x^2 + _C2 e^x + _C3 \left(\frac{x^2 \ln(x - 2)}{4} - \frac{x^2 \ln(x)}{4} + \text{Ei}(1, x - 2) e^{x-2} + \frac{x}{2} + \frac{1}{2} \right) \right\}$$

2.1486 ODE No. 1486

$$(2x - 1)y^{(3)}(x) - 8xy'(x) + 8y(x) = 0$$

✓ **Mathematica** : cpu = 0.168987 (sec), leaf count = 65

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}c_3x \left(\frac{e^{2x-2}\text{Ei}(2 - 4x)}{x} - \frac{2\text{Ei}(1 - 2x)}{e} - \frac{e^{-2x}}{x} \right) + c_1x - c_2e^{2x} \right\} \right\}$$

✓ **Maple** : cpu = 0.251 (sec), leaf count = 50

$$\left\{ y(x) = _C1 x + _C2 e^{2x} + _C3 \left(-\frac{xe^{-1}\text{Ei}(1, 2x - 1)}{2} + \frac{\text{Ei}(1, 4x - 2) e^{2x-2}}{4} + \frac{e^{-2x}}{4} \right) \right\}$$

2.1487 ODE No. 1487

$$(2x - 1)y^{(3)}(x) + (x + 4)y''(x) + 2y'(x) = 0$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.11 (sec), leaf count = 38

$$\left\{ y(x) = 1 \left(-C3 + \int (2 - C1 x + -C2) e^{\frac{x}{2}} (2x - 1)^{-\frac{3}{4}} dx \right) e^{-\frac{x}{2}} \frac{1}{\sqrt[4]{2x - 1}} \right\}$$

2.1488 ODE No. 1488

$$ax^2y(x) + x^2y^{(3)}(x) - 6y'(x) = 0$$

✓ **Mathematica** : cpu = 0.544868 (sec), leaf count = 102

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-\sqrt[3]{ax}} (\sqrt[3]{ax} + 2)}{x} + \frac{c_2 e^{\sqrt[3]{-1} \sqrt[3]{ax}} (\sqrt[3]{ax} + 2(-1)^{2/3})}{x} + \frac{c_3 e^{-(-1)^{2/3} \sqrt[3]{ax}} (\sqrt[3]{ax} - 2\sqrt[3]{-1})}{x} \right\} \right\}$$

✓ **Maple** : cpu = 0.565 (sec), leaf count = 151

$$\left\{ y(x) = \frac{C1}{x} \left(a^3 x + 2(-a^4)^{2/3} \right) e^{\frac{x}{a} \sqrt[3]{-a^4}} + \frac{C2}{x} \left((-a^4)^{\frac{2}{3}} \sqrt{3} - ia^3 x + i(-a^4)^{\frac{2}{3}} \right) e^{\frac{i}{2} \frac{(-\sqrt{3}+i)x}{a} \sqrt[3]{-a^4}} + \frac{C3}{x} \right\}$$

2.1489 ODE No. 1489

$$x^2y^{(3)}(x) + (x + 1)y''(x) - y(x) = 0$$

✗ **Mathematica** : cpu = 0.768181 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{y^{(3)}(x)x^2 - y(x) + (x + 1)y''(x) = 0, y(1) = c_1, y'(1) = c_2, y''(1) = c_3\}) \right\} \right\}$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \text{DESol} \left(\left\{ -Y(x) + (1 + x) \frac{d^2}{dx^2} Y(x) + x^2 \frac{d^3}{dx^3} Y(x) \right\}, \{-Y(x)\} \right) \right\}$$

2.1490 ODE No. 1490

$$x^2 y^{(3)}(x) + (x^2 + 1) y'(x) - xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0207417 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} c_1 x^2 {}_0\tilde{F}_1 \left(; 2; -\frac{x^2}{4} \right) + c_2 x Y_1(x) + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.076 (sec), leaf count = 18

$$\{y(x) = _C1 + _C2 x J_1(x) + _C3 x Y_1(x)\}$$

2.1491 ODE No. 1491

$$(-4a^2\nu^2 + 4a^2x^{2a} + 1) y'(x) + x^2 y^{(3)}(x) + 3xy''(x) = 4a^3 x^{2a-1} y(x)$$

✓ **Mathematica** : cpu = 0.0468981 (sec), leaf count = 102

$$\left\{ \left\{ y(x) \rightarrow c_2 (x^{2a})^{-\nu} {}_1F_2 \left(-\nu - \frac{1}{2}; 1 - 2\nu, 1 - \nu; -x^{2a} \right) + c_3 (x^{2a})^\nu {}_1F_2 \left(\nu - \frac{1}{2}; \nu + 1, 2\nu + 1; -x^{2a} \right) + c_1 \right\} \right\}$$

✓ **Maple** : cpu = 0.094 (sec), leaf count = 88

$$\{y(x) = _C1 {}_1F_2 \left(-\frac{1}{2}; \nu + 1, -\nu + 1; -x^{2a} \right) + _C2 x^{-2a\nu} {}_1F_2 \left(-\frac{1}{2} - \nu; 1 - 2\nu, -\nu + 1; -x^{2a} \right) + _C3 x^{2a\nu} {}_1F_2 \left(\nu - \frac{1}{2}; \nu + 1, 2\nu + 1; -x^{2a} \right)\}$$

2.1492 ODE No. 1492

$$(4x(n - m) + m(2m - 1) + 2x^2) y'(x) - 2n(-2m + 2x + 1)y(x) - 3x(x - m)y''(x) + x^2 y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.39644 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow c_2 U(-n, m, x) L_n^{m-1}(x) + c_1 U(-n, m, x)^2 + c_3 L_n^{m-1}(x)^2 \right\} \right\}$$

✓ **Maple** : cpu = 0.125 (sec), leaf count = 39

$$\{y(x) = _C1 (M(-n, m, x))^2 + _C2 (U(-n, m, x))^2 + _C3 M(-n, m, x) U(-n, m, x)\}$$

2.1493 ODE No. 1493

$$-f(x) + x^2 y^{(3)}(x) + (x^2 + 2) y'(x) + 4xy''(x) + 3xy(x) = 0$$

✓ **Mathematica** : cpu = 7.34605 (sec), leaf count = 2582

$$\left\{ \left\{ y(x) \rightarrow J_0(x)c_1 + 2Y_0(x)c_2 + \frac{2c_3 {}_1F_2\left(1; \frac{1}{2}, \frac{1}{2}; -\frac{x^2}{4}\right)}{x} + \frac{x J_0(x) \int_1^x \left(\frac{-16J_1(K[1])Y_0(K[1])^2 f(K[1]) {}_1F_2\left(3; \frac{5}{2}, \frac{5}{2}; -\frac{1}{4}K\right)}{\dots} \right)}{\dots} \right. \right.$$

✓ **Maple** : cpu = 0.355 (sec), leaf count = 1849

$$\left\{ y(x) = \frac{1}{x} \left(\int 9 \frac{\dots}{-4 {}_1F_2\left(3; 5/2, 5/2; -1/4 x^2\right) J_1(x) G_{1,3}^{3,1}\left(1/4 x^2 \left| \begin{smallmatrix} -1/2 \\ 0,0,-1/2 \end{smallmatrix} \right. \right) x^5 - 9 {}_1F_2\left(2; 3/2, 3/2; -1/4 x\right)} \right. \right.$$

2.1494 ODE No. 1494

$$x^2 y^{(3)}(x) + 5xy''(x) + 4y'(x) - \log(x) = 0$$

✓ **Mathematica** : cpu = 0.0279752 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow -\frac{c_1}{x} - \frac{2c_2}{x} - \frac{2c_2 \log(x)}{x} + c_3 - \frac{x}{2} + \frac{1}{4} x \log(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.019 (sec), leaf count = 25

$$\left\{ y(x) = -C1 + \frac{-C2 \ln(x)}{x} + \frac{-C3}{x} + \frac{x(\ln(x) - 2)}{4} \right\}$$

2.1495 ODE No. 1495

$$x^2 y^{(3)}(x) + 6xy''(x) + 6y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0191062 (sec), leaf count = 24

$$\left\{ \left\{ y(x) \rightarrow -\frac{c_2}{2x^2} - \frac{c_1}{x} + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.014 (sec), leaf count = 16

$$\left\{ y(x) = -C1 + \frac{-C2}{x} + \frac{-C3}{x^2} \right\}$$

2.1496 ODE No. 1496

$$ax^2y(x) + x^2y^{(3)}(x) + 6xy''(x) + 6y'(x) = 0$$

✓ **Mathematica** : cpu = 0.262793 (sec), leaf count = 63

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-\sqrt[3]{ax}}}{x^2} + \frac{c_2 e^{\sqrt[3]{-1} \sqrt[3]{ax}}}{x^2} + \frac{c_3 e^{-(-1)^{2/3} \sqrt[3]{ax}}}{x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 67

$$\left\{ y(x) = \frac{1}{x^2} \left(-C1 e^{(-\frac{1}{2} \sqrt[3]{-a} + \frac{i}{2} \sqrt{3} \sqrt[3]{-a})x} + -C2 e^{(-\frac{1}{2} \sqrt[3]{-a} - \frac{i}{2} \sqrt{3} \sqrt[3]{-a})x} + -C3 e^{\sqrt[3]{-ax}} \right) \right\}$$

2.1497 ODE No. 1497

$$-3x(p+q)y''(x) + 3p(3q+1)y'(x) + x^2y^{(3)}(x) + x^2(-y(x)) = 0$$

✓ **Mathematica** : cpu = 0.45963 (sec), leaf count = 135

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_0F_2\left(\frac{2}{3} - p, \frac{1}{3} - q; \frac{x^3}{27}\right) + c_2 (-1)^{\frac{1}{3}(3p+1)} 3^{-3p-1} x^{3p+1} {}_0F_2\left(p + \frac{4}{3}, p - q + \frac{2}{3}; \frac{x^3}{27}\right) + c_3 (-1)^{\frac{1}{3}(3q+1)} 3^{-3q-1} x^{3q+1} {}_0F_2\left(p + \frac{4}{3}, p - q + \frac{2}{3}; \frac{x^3}{27}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.254 (sec), leaf count = 77

$$\left\{ y(x) = -C1 {}_0F_2\left(-p + \frac{2}{3}, -q + \frac{1}{3}; \frac{x^3}{27}\right) + -C2 x^{1+3p} {}_0F_2\left(p + \frac{4}{3}, \frac{2}{3} - q + p; \frac{x^3}{27}\right) + -C3 x^{3q+2} {}_0F_2\left(p + \frac{4}{3}, \frac{2}{3} - q + p; \frac{x^3}{27}\right) \right\}$$

2.1498 ODE No. 1498

$$(ax^2 + 6n)y'(x) - 2axy(x) - 2(n+1)xy''(x) + x^2y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 8.35585 (sec), leaf count = 584

$$\left\{ \left\{ y(x) \rightarrow -\frac{\pi c_3 2^{-n-\frac{3}{2}} x (\sqrt{ax})^{-n-\frac{1}{2}} \left(-a^{3/2} 2^{2n} x^3 \sec(\pi n) \Gamma\left(\frac{3}{2} - n\right) \Gamma\left(n + \frac{3}{2}\right) J_{\frac{1}{2}(2n+1)}(\sqrt{ax}) {}_1\tilde{F}_2\left(\frac{3}{2} - n; \frac{1}{2}, \frac{3}{2}; -ax\right) \right)}{2^{2n+1} \Gamma\left(\frac{3}{2} - n\right) \Gamma\left(n + \frac{3}{2}\right)} \right\} \right\}$$

✓ **Maple** : cpu = 0.237 (sec), leaf count = 53

$$\left\{ y(x) = -C1 x^{n+\frac{1}{2}} J_{-n-\frac{1}{2}}(\sqrt{ax}) + -C2 x^{n+\frac{1}{2}} Y_{-n-\frac{1}{2}}(\sqrt{ax}) + -C3 (ax^2 + 4n - 2) \right\}$$

2.1499 ODE No. 1499

$$-\left(\nu^2 + x^2 - \frac{1}{4}\right) y'(x) + \left(\nu^2 + x^2 - 2x - \frac{1}{4}\right) y(x) + x^2 y^{(3)}(x) - (x^2 - 2x) y''(x) = 0$$

✓ **Mathematica** : cpu = 0.232783 (sec), leaf count = 97

$$\left\{ \left\{ y(x) \rightarrow \frac{c_3 e^x x^{\nu+\frac{1}{2}} \Gamma\left(\nu + \frac{1}{2}\right) {}_1\tilde{F}_1\left(\nu + \frac{1}{2}; 2\nu + 1; -2x\right)}{\Gamma\left(\frac{3}{2} - \nu\right)} + c_2 2^{-\nu-\frac{1}{2}} e^x G_{2,3}^{2,1}\left(2x \left| \begin{matrix} 1, 0 \\ \frac{1}{2} - \nu, \nu + \frac{1}{2}, 0 \end{matrix} \right. \right) + c_1 e^x \right\} \right\}$$

✓ **Maple** : cpu = 0.246 (sec), leaf count = 25

$$\{y(x) = _C1 e^x + _C2 \sqrt{x} I_\nu(x) + _C3 \sqrt{x} K_\nu(x)\}$$

2.1500 ODE No. 1500

$$\nu(2x + 1)y'(x) - \nu(x + 1)y(x) - x(\nu + x)y''(x) + x^2 y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 47.1164 (sec), leaf count = 0 , DifferentialRoot result

$$\{\{y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{y^{(3)}(x)x^2 - (x + \nu)y''(x)x - (x + 1)\nu y(x) + (2x\nu + \nu)y'(x) = 0, y(1)\})\}\}$$

✓ **Maple** : cpu = 0.208 (sec), leaf count = 55

$$\{y(x) = _C1 e^x + _C2 x^{\frac{\nu}{2}+\frac{1}{2}} J_{-\nu-1}(2\sqrt{\nu}\sqrt{x}) + _C3 x^{\frac{\nu}{2}+\frac{1}{2}} Y_{-\nu-1}(2\sqrt{\nu}\sqrt{x})\}$$

2.1501 ODE No. 1501

$$\left(-\nu^2 + x^2 - 2x + \frac{1}{4}\right) y'(x) + \left(\nu^2 - \frac{1}{4}\right) y(x) + x^2 y^{(3)}(x) - 2(x^2 - x) y''(x) = 0$$

✓ **Mathematica** : cpu = 0.187758 (sec), leaf count = 86

$$\left\{ \left\{ y(x) \rightarrow \frac{c_3 e^x x^{\nu+\frac{1}{2}} \Gamma\left(\nu + \frac{1}{2}\right) {}_1\tilde{F}_1\left(\nu + \frac{1}{2}; 2\nu + 1; -x\right)}{\Gamma\left(\frac{3}{2} - \nu\right)} + c_2 e^x G_{2,3}^{2,1}\left(x \left| \begin{matrix} 1, 0 \\ \frac{1}{2} - \nu, \nu + \frac{1}{2}, 0 \end{matrix} \right. \right) + c_1 e^x \right\} \right\}$$

✓ **Maple** : cpu = 0.224 (sec), leaf count = 37

$$\{y(x) = _C1 e^x + _C2 e^{\frac{x}{2}} \sqrt{x} I_\nu\left(\frac{x}{2}\right) + _C3 e^{\frac{x}{2}} \sqrt{x} K_\nu\left(\frac{x}{2}\right)\}$$

2.1502 ODE No. 1502

$$-(x^4 - 6x)y''(x) - (2x^3 - 6)y'(x) + x^2y^{(3)}(x) + 2x^2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0548894 (sec), leaf count = 98

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 \Gamma\left(\frac{1}{3}\right) {}_2F_2\left(-\frac{2}{3}, \frac{1}{3}; \frac{2}{3}, \frac{4}{3}; \frac{x^3}{3}\right)}{3x \Gamma\left(\frac{4}{3}\right)} + \frac{\sqrt[3]{-\frac{1}{3}} c_3 \Gamma\left(\frac{2}{3}\right) {}_2F_2\left(-\frac{1}{3}, \frac{2}{3}; \frac{4}{3}, \frac{5}{3}; \frac{x^3}{3}\right)}{3 \Gamma\left(\frac{5}{3}\right)} + \frac{c_1}{x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.486 (sec), leaf count = 109

$$\left\{ y(x) = \frac{C1}{x^2} + \frac{C2}{x^2} \int e^{\frac{x^3}{6}} \sqrt{x} \left(I_{-\frac{5}{6}}\left(-\frac{x^3}{6}\right) x^3 + I_{\frac{1}{6}}\left(-\frac{x^3}{6}\right) x^3 - 2 I_{1/6}(-1/6 x^3) \right) dx + \frac{C3}{x^2} \int e^{\frac{x^3}{6}} \sqrt{x} dx \right\}$$

2.1503 ODE No. 1503

$$(x^2 + 1)y^{(3)}(x) + \frac{1}{x^2} + 8xy''(x) + 10y'(x) - 2\log(x) - 3 = 0$$

✓ **Mathematica** : cpu = 0.112436 (sec), leaf count = 62

$$\left\{ \left\{ y(x) \rightarrow c_3 - \frac{100(3c_2 - 1)x^3 + 900c_2x + 225c_1 + 36x^5 - 60(3x^4 + 10x^2 + 15)x \log(x)}{900(x^2 + 1)^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.027 (sec), leaf count = 86

$$\left\{ y(x) = \frac{x^2(x^2 + 2) - C1}{(x^2 + 1)^2} + \frac{x(x^2 + 3) - C2}{(x^2 + 1)^2} + \frac{-C3}{(x^2 + 1)^2} + \frac{x(45x^4 \ln(x) - 9x^4 + 150x^2 \ln(x) - 50x^2 + 225)}{225(x^2 + 1)^2} \right\}$$

2.1504 ODE No. 1504

$$(x^2 + 2)y^{(3)}(x) + (x^2 + 2)y'(x) - 2xy''(x) - 2xy(x) = 0$$

✓ **Mathematica** : cpu = 0.109167 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 x^2}{2} + \frac{1}{2} i c_2 e^{-ix} - \frac{1}{4} c_3 e^{ix} \right\} \right\}$$

✓ **Maple** : cpu = 0.196 (sec), leaf count = 18

$$\{y(x) = -C1 x^2 + -C2 \cos(x) + -C3 \sin(x)\}$$

2.1505 ODE No. 1505

$$(2ax + b)y'(x) + ay(x) + 2(x - 1)xy^{(3)}(x) + 3(2x - 1)y''(x) = 0$$

✗ **Mathematica** : cpu = 62.1009 (sec), leaf count = 0 , DifferentialRoot result

$$\{ \{y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{ay(x) + (2xa + b)y'(x) + (6x - 3)y''(x) + 2(x - 1)xy^{(3)}(x) = 0, y(2)$$

✓ **Maple** : cpu = 0.151 (sec), leaf count = 79

$$\left\{ y(x) = _C1 \left(\text{MathieuC} \left(-\frac{a}{2} - \frac{b}{2} + 1, \frac{a}{4}, \arccos(\sqrt{x}) \right) \right)^2 + _C2 \left(\text{MathieuS} \left(-\frac{a}{2} - \frac{b}{2} + 1, \frac{a}{4}, \arccos(\sqrt{x}) \right) \right)^2 \right.$$

2.1506 ODE No. 1506

$$4x^2y^{(3)}(x) + (x^2 + 14x - 1)y''(x) + 4(x + 1)y'(x) + 2y(x) = 0$$

✗ **Mathematica** : cpu = 300.01 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.056 (sec), leaf count = 43

$$\left\{ y(x) = \left(_C3 + \int \frac{2_C1 x + _C2}{4} e^{\frac{x}{4}} e^{\frac{1}{4x}} x^{-\frac{5}{2}} dx \right) e^{-\frac{x}{4}} e^{-\frac{1}{4x}} \sqrt{x} \right\}$$

2.1507 ODE No. 1507

$$xy^{(3)}(x)(ax + b) + (\alpha x + \beta)y''(x) - f(x) + xy'(x) + y(x) = 0$$

✗ **Mathematica** : cpu = 2.4734 (sec), leaf count = 0 , could not solve

DSolve[-f[x] + y[x] + x*Derivative[1][y][x] + (beta + alpha*x)*Derivative[2][y][x] + x

✓ **Maple** : cpu = 0.67 (sec), leaf count = 1421

$$\left\{ y(x) = (ax + b)^{\frac{(2b+\beta)\alpha - \alpha b}{ab}} \text{HeunC} \left(0, \frac{-2b + \beta}{b}, \frac{(2b + \beta)a - \alpha b}{ab}, -\frac{b}{a^2}, \frac{(4a - \alpha)b^2 - \alpha\beta b + a\beta^2}{2ab^2}, -\frac{ax}{b} \right) \right.$$

2.1508 ODE No. 1508

$$y(x) (ax^3 + \nu^2 - 1) + (1 - \nu^2) xy'(x) + x^3 y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.818 (sec), leaf count = 143

$$\left\{ \left\{ y(x) \rightarrow c_2 3^{\nu-1} a^{\frac{1-\nu}{3}} x^{1-\nu} {}_0F_2 \left(; 1 - \frac{2\nu}{3}, 1 - \frac{\nu}{3}; -\frac{ax^3}{27} \right) + c_3 3^{-\nu-1} a^{\frac{\nu+1}{3}} x^{\nu+1} {}_0F_2 \left(; \frac{\nu}{3} + 1, \frac{2\nu}{3} + 1; -\frac{ax^3}{27} \right) \right. \right.$$

✓ **Maple** : cpu = 0.144 (sec), leaf count = 81

$$\left\{ y(x) = _C1 x {}_0F_2 \left(; -\frac{\nu}{3} + 1, \frac{\nu}{3} + 1; -\frac{ax^3}{27} \right) + _C2 x^{-\nu+1} {}_0F_2 \left(; -\frac{\nu}{3} + 1, 1 - \frac{2\nu}{3}; -\frac{ax^3}{27} \right) + _C3 x^{\nu+1} {}_0F_2 \left(; \frac{\nu}{3} + 1, \frac{2\nu}{3} + 1; -\frac{ax^3}{27} \right) \right.$$

2.1509 ODE No. 1509

$$((1 - 4\nu^2) x + 4x^3) y'(x) + (4\nu^2 - 1) y(x) + x^3 y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.0110238 (sec), leaf count = 34

$$\left\{ \left\{ y(x) \rightarrow c_1 x J_\nu(x)^2 + c_3 x Y_\nu(x)^2 + c_2 x J_\nu(x) Y_\nu(x) \right\} \right.$$

✓ **Maple** : cpu = 0.053 (sec), leaf count = 30

$$\left\{ y(x) = _C1 x (J_\nu(x))^2 + _C2 x (Y_\nu(x))^2 + _C3 x J_\nu(x) Y_\nu(x) \right.$$

2.1510 ODE No. 1510

$$y(x) (a(\nu - 1)x^{2\nu} + bx^{3\nu} + \nu^2 - 1) + x(ax^{2\nu} - \nu^2 + 1) y'(x) + x^3 y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.0904668 (sec), leaf count = 0 , could not solve

`DSolve[(-1 + nu^2 + a*(-1 + nu)*x^(2*nu) + b*x^(3*nu))*y[x] + x*(1 - nu^2 + a*x^(2*nu))y'[x] + x^3 y'''[x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ x^3 \frac{d^3}{dx^3} Y(x) + (x^{2\nu} ax - \nu^2 x + x) \frac{d}{dx} Y(x) + (x^{2\nu} a\nu - ax^{2\nu} + bx^{3\nu} + \nu^2 - 1) Y(x) \right. \right. \right.$$

2.1511 ODE No. 1511

$$x^3 y^{(3)}(x) + (x+8)x^3 - 6(x-1)x^3 \log(x) + 3x^2 y''(x) - 2xy'(x) + 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0379453 (sec), leaf count = 51

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1}{x^2} + c_2 x + c_3 x \log(x) + \frac{1}{450} (-50x^4 + 50x^4 \log(x) - 18x^3 - 135x^3 \log(x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.033 (sec), leaf count = 37

$$\left\{ y(x) = \frac{x^3(50x \ln(x) - 135 \ln(x) - 50x - 18)}{450} + _C1 x + \frac{_C2}{x^2} + _C3 x \ln(x) \right\}$$

2.1512 ODE No. 1512

$$(1-a^2)xy'(x) + x^3y^{(3)}(x) + 3x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0411416 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow -\frac{c_1 x^{-a}}{a} + \frac{c_2 x^a}{a} + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.013 (sec), leaf count = 18

$$\{y(x) = _C1 + _C2 x^{-a} + _C3 x^a\}$$

2.1513 ODE No. 1513

$$x^3 y^{(3)}(x) - 4x^2 y''(x) + (x^2 + 8)xy'(x) - 2(x^2 + 4)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0833341 (sec), leaf count = 25

$$\left\{ \left\{ y(x) \rightarrow c_1 x^2 - c_2 x \sin(x) + c_3 x \cos(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.2 (sec), leaf count = 20

$$\{y(x) = _C1 x^2 + _C2 x \sin(x) + _C3 \cos(x) x\}$$

2.1514 ODE No. 1514

$$(ax^3 - 12)y(x) + x^3y^{(3)}(x) + 6x^2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.737545 (sec), leaf count = 102

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1 e^{-\sqrt[3]{ax}} (\sqrt[3]{ax} + 2)}{x^3} + \frac{c_2 e^{\sqrt[3]{-1} \sqrt[3]{ax}} (\sqrt[3]{ax} + 2(-1)^{2/3})}{x^3} + \frac{c_3 e^{-(-1)^{2/3} \sqrt[3]{ax}} (\sqrt[3]{ax} - 2\sqrt[3]{-1})}{x^3} \right\} \right\}$$

✓ **Maple** : cpu = 0.503 (sec), leaf count = 151

$$\left\{ y(x) = \frac{C1}{x^3} \left(a^3 x + 2(-a^4)^{2/3} \right) e^{\frac{x}{\sqrt[3]{-a^4}}} + \frac{C2}{x^3} \left(-ia^3 x + i(-a^4)^{2/3} - (-a^4)^{2/3} \sqrt{3} \right) e^{\frac{i(\sqrt{3}+i)x}{a} \sqrt[3]{-a^4}} + \frac{C3}{x^3} \right\}$$

2.1515 ODE No. 1515

$$y(x) (a(4c^2\nu^2 - a^2) + 4b^2c^2(c - a)x^{2c}) + y'(x) (3(a - 1)ax + 4b^2c^2x^{2c+1} - 4c^2\nu^2 + 1) + 3(1 - a)x^2y''(x) + x^3y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.2159 (sec), leaf count = 0 , could not solve

`DSolve[(a*(-a^2 + 4*c^2*nu^2) + 4*b^2*c^2*(-a + c)*x^(2*c))*y[x] + (1 - 4*c^2*nu^2 + 3*(1 + a)*a*x + 4*b^2*c^2*x^(1 + 2*c))*Derivative[1][y][x] + 3*(1 - a)*x^2*Derivative[2][y][x] + x^3*Derivative[3][y][x] == 0, x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.1516 ODE No. 1516

$$x^3y^{(3)}(x) + (x + 3)x^2y''(x) + 5(x - 6)xy'(x) + (4x + 30)y(x) = 0$$

✗ **Mathematica** : cpu = 300.035 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.457 (sec), leaf count = 263

$$\left\{ y(x) = \frac{-C1(x^4 - 84x^3 + 2016x^2 - 20160x + 75600)}{x^6} + \frac{-C2 e^{-x}(x^8 + 28x^7 + 450x^6 + 5100x^5 + 42900x^4 + 252000x^3 + 756000x^2 + 1209600x + 504000)}{x^6} \right\}$$

2.1517 ODE No. 1517

$$x^3 y^{(3)}(x) - 2x^3 + x^2 y''(x) + 2xy'(x) - y(x) + \log(x) = 0$$

✓ **Mathematica** : cpu = 0.40462 (sec), leaf count = 30686

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✓ **Maple** : cpu = 0.717 (sec), leaf count = 1771

$$\left\{ y(x) = - \int - \frac{5 \left(x^{1/12} \sqrt[3]{44+12\sqrt{69}+2/3} + \frac{11(44+12\sqrt{69})^{2/3}}{1200} - \frac{\sqrt{69}(44+12\sqrt{69})^{2/3}}{400} \right)^2 \sqrt[3]{44+12\sqrt{69}}(\ln(x) - 2x^3)}{2x^3(3\sqrt{3}\sqrt{23}+11)(11\sqrt{3}\sqrt{23}-207)} dx \right\} \quad (3)$$

2.1518 ODE No. 1518

$$x(x^2 + 1) y^{(3)}(x) + 3(2x^2 + 1) y''(x) - 12y(x) = 0$$

✓ **Mathematica** : cpu = 0.247697 (sec), leaf count = 106

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{3}c_1(2x^2 + 1) + \frac{1}{3}c_2x\sqrt{x^2 + 1} + \frac{c_3(2x^2 + 1)(3x^2 + 3\sqrt{x^2 + 1}x^2 \log(x) - 3\sqrt{x^2 + 1}x^2 \log(\sqrt{x^2 + 1}))}{6(2x^3 + x)} \right\} \right\}$$

✓ **Maple** : cpu = 0.463 (sec), leaf count = 56

$$\left\{ y(x) = _C1 \sqrt{x^2 + 1}x + \frac{_C2}{x} \left(3\sqrt{x^2 + 1}x^2 \operatorname{Artanh}\left(\frac{1}{\sqrt{x^2 + 1}}\right) - 3x^2 - 1 \right) + _C3(2x^2 + 1) \right\}$$

2.1519 ODE No. 1519

$$(x + 3)x^2 y^{(3)}(x) - 3(x + 2)xy''(x) + 6(x + 1)y'(x) - 6y(x) = 0$$

✓ **Mathematica** : cpu = 0.0306557 (sec), leaf count = 65

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4}c_1(x^3 - 3x^2 + 3x + 3) + \frac{1}{2}c_2(-x^3 + 3x^2 - x - 1) + \frac{1}{8}c_3(3x^3 - 5x^2 + x + 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.24 (sec), leaf count = 20

$$\{y(x) = _C1 x^2 + x^3 _C2 + _C3(1 + x)\}$$

2.1520 ODE No. 1520

$$y''(x) (-6x(a_1 + a_2 + a_3) + 3a_1a_2 + 3a_1a_3 + 3a_2a_3 + 9x^2) + 2(x-a_1)(x-a_2)(x-a_3)y^{(3)}(x) - 2(b + (n^2 +$$

✗ **Mathematica** : cpu = 72.8348 (sec), leaf count = 0 , DifferentialRoot result

$$\{ \{y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{-n(n+1)y(x) - 2(xn^2 + xn - 3x + b)y'(x) + 3(3x^2 - 2a_1x - 2a_2$$

✓ **Maple** : cpu = 0.586 (sec), leaf count = 279

$$\left\{ y(x) = _C1 \left(\text{HeunG} \left(\frac{-a_3 + a_1}{-a_2 + a_1}, -\frac{a_1 n^2 + a_1 n - a_1 - a_2 - a_3 + b}{-4 a_2 + 4 a_1}, -\frac{n}{2}, \frac{1}{2} + \frac{n}{2}, \frac{1}{2}, \frac{1}{2}, \frac{-x + a_1}{-a_2 + a_1} \right) \right)$$

2.1521 ODE No. 1521

$$(x+1)x^3y^{(3)}(x) - (4x+2)x^2y''(x) + (10x+4)xy'(x) - 4(3x+1)y(x) = 0$$

✓ **Mathematica** : cpu = 0.0666008 (sec), leaf count = 35

$$\left\{ \left\{ y(x) \rightarrow c_1x^2 + c_3x^2 \left(x + \frac{1}{x} + \log^2(x) \right) + c_2x^2 \log(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.397 (sec), leaf count = 31

$$\{y(x) = _C1 x^2 + _C2 x^2 \ln(x) + _C3 (x(\ln(x))^2 + x^2 + 1) x\}$$

2.1522 ODE No. 1522

$$4x^4y^{(3)}(x) - 4x^3y''(x) + 4x^2y'(x) - 1 = 0$$

✓ **Mathematica** : cpu = 0.0208226 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1x^2}{2} - \frac{c_2x^2}{4} + \frac{1}{2}c_2x^2 \log(x) + c_3 - \frac{1}{36x} \right\} \right\}$$

✓ **Maple** : cpu = 0.04 (sec), leaf count = 31

$$\left\{ y(x) = \frac{x^2 _C1 \ln(x)}{2} - \frac{_C1 x^2}{4} + \frac{x^2 _C2}{2} - \frac{1}{36x} + _C3 \right\}$$

2.1523 ODE No. 1523

$$-(4x^2 + 2)x^2y''(x) + (10x^2 + 4)xy'(x) - 4(3x^2 + 1)y(x) + (x^2 + 1)x^3y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.121292 (sec), leaf count = 74

$$\left\{ \left\{ y(x) \rightarrow c_1(-x^3 + 3x^2 - x) + \frac{1}{2}c_2(x^3 - 2x^2 + x) - \frac{c_3x(-x^3 + 3x^2 - x)(\log(x) + 1)}{2(x^2 - 3x + 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.439 (sec), leaf count = 26

$$\{y(x) = _C1 x^2 + _C2 x^2(\ln(x) + 1) + _C3 (x^3 + x)\}$$

2.1524 ODE No. 1524

$$x^6y^{(3)}(x) + x^2y''(x) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.141661 (sec), leaf count = 96

$$\left\{ \left\{ y(x) \rightarrow -\frac{\left(-\frac{1}{3}\right)^{2/3} c_2 x \Gamma\left(\frac{1}{3}\right) {}_2F_2\left(-\frac{2}{3}, \frac{1}{3}; \frac{2}{3}, \frac{4}{3}; \frac{1}{3x^3}\right)}{3\Gamma\left(\frac{4}{3}\right)} + \frac{c_3 \Gamma\left(\frac{2}{3}\right) {}_2F_2\left(-\frac{1}{3}, \frac{2}{3}; \frac{4}{3}, \frac{5}{3}; \frac{1}{3x^3}\right)}{9\Gamma\left(\frac{5}{3}\right)} + c_1 x^2 \right\} \right\}$$

✓ **Maple** : cpu = 0.495 (sec), leaf count = 104

$$\left\{ y(x) = _C1 x^2 + _C2 \int 1e^{\frac{1}{6x^3}} \left(2x^3 K_{1/6}(-1/6 x^{-3}) + K_{5/6}\left(-\frac{1}{6x^3}\right) - K_{1/6}\left(-\frac{1}{6x^3}\right) \right) x^{-\frac{11}{2}} dx x^2 + _C3 \right\}$$

2.1525 ODE No. 1525

$$ay(x) + x^6y^{(3)}(x) + 6x^5y''(x) = 0$$

✓ **Mathematica** : cpu = 0.43445 (sec), leaf count = 102

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{\frac{\sqrt[3]{a}}{x}} (2x - \sqrt[3]{a}) + c_2 e^{\frac{(-1)^{2/3} \sqrt[3]{a}}{x}} \left(x - \frac{1}{2} (-1)^{2/3} \sqrt[3]{a} \right) + c_3 e^{-\frac{\sqrt[3]{-1} \sqrt[3]{a}}{x}} \left(\frac{1}{2} \sqrt[3]{-1} \sqrt[3]{a} + x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.487 (sec), leaf count = 142

$$\left\{ y(x) = _C1 \left(2ax + \sqrt[3]{-a^4} \right) e^{-\frac{1}{ax} \sqrt[3]{-a^4}} + _C2 \left(-4iax + i\sqrt[3]{-a^4} - \sqrt[3]{-a^4} \sqrt{3} \right) e^{-\frac{\frac{1}{2}(-\sqrt{3}+i)}{ax} \sqrt[3]{-a^4}} + _C3 e^{\dots} \right\}$$

2.1526 ODE No. 1526

$$(x^4 + 2x^2 + 2x + 1) x^2 y^{(3)}(x) - (2x^6 + 3x^4 - 6x^2 - 6x - 1) y''(x) + (x^6 - 6x^3 - 15x^2 - 12x - 2) y'(x) + (x^6 - 6x^3 - 15x^2 - 12x - 2) y(x) = 0$$

✗ **Mathematica** : cpu = 300.092 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.216 (sec), leaf count = 20

$$\left\{ y(x) = _C1 e^x + _C2 e^{x^{-1}} + _C3 x e^x \right\}$$

2.1527 ODE No. 1527

$$(x - a)^3 (x - b)^3 y^{(3)}(x) - c y(x) = 0$$

✗ **Mathematica** : cpu = 135.206 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{(a - x)^3 (b - x)^3 y^{(3)}(x) - c y(x) = 0, y(0) = c_1, y'(0) = c_2, y''(0) = c_3\}) \right\} \right\}$$

✓ **Maple** : cpu = 0.542 (sec), leaf count = 500

$$\left\{ y(x) = _C1 (x - b)^{2 \frac{a}{a-b}} (x - a)^{-2 \frac{b}{a-b}} (b - x)^{-\frac{\text{RootOf}(_Z^3 + (-3 a - 3 b) _Z^2 + (2 a^2 + 8 a b + 2 b^2) _Z - 4 a^2 b - 4 a b^2 - c, \text{index}=1)}{a-b}} (a - x)^{\frac{a}{a-b}} \right\}$$

2.1528 ODE No. 1528

$$y^{(3)}(x) \sin(x) + (2 \cos(x) + 1) y''(x) - \sin(x) y'(x) - \cos(x) = 0$$

✓ **Mathematica** : cpu = 0.609514 (sec), leaf count = 72

$$\left\{ \left\{ y(x) \rightarrow \frac{\sin\left(\frac{x}{2}\right) \left(\sqrt{2} (c_2 x \sin\left(\frac{x}{2}\right) + \cos\left(\frac{x}{2}\right) (c_2 \log(2(\cos(x) + 1)) + 2c_1)) - 2 \cos\left(\frac{x}{2}\right) \sin^{-1}(\cos(x)) \right) + \cos(x)}{\cos(x) - 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.162 (sec), leaf count = 69

$$\left\{ y(x) = \frac{_C1}{\cos(x) - 1} \left(\cos(x) x + \ln\left(-\frac{\cos(x) - 1}{\sin(x)}\right) \sin(x) - \ln(\sin(x)) \sin(x) - x \right) + _C2 + \frac{\sin(x)}{\cos(x)} \right\}$$

2.1529 ODE No. 1529

$$y^{(3)}(x)(x + \sin(x)) + 3(\cos(x) + 1)y''(x) - 3\sin(x)y'(x) - y(x)\cos(x) + \sin(x) = 0$$

✗ **Mathematica** : cpu = 0.0774333 (sec), leaf count = 0 , could not solve

DSolve[Sin[x] - Cos[x]*y[x] - 3*Sin[x]*Derivative[1][y][x] + 3*(1 + Cos[x])*Derivative

✓ **Maple** : cpu = 0.079 (sec), leaf count = 43

$$\left\{ y(x) = \frac{-C1 x^2}{\sin(x) + x} + \frac{-C2 x}{\sin(x) + x} - \frac{\cos(x)}{\sin(x) + x} + \frac{-C3}{\sin(x) + x} \right\}$$

2.1530 ODE No. 1530

$$y'(x) (4\nu(\nu + 1) \sin^2(x) + \cos(2x)) + 2\nu(\nu + 1)y(x) \sin(2x) + y^{(3)}(x) \sin^2(x) + 3\sin(x) \cos(x)y''(x) = 0$$

✗ **Mathematica** : cpu = 0.169964 (sec), leaf count = 0 , could not solve

DSolve[2*nu*(1 + nu)*Sin[2*x]*y[x] + (Cos[2*x] + 4*nu*(1 + nu)*Sin[x]^2)*Derivative[1]

✓ **Maple** : cpu = 0.234 (sec), leaf count = 113

$$\left\{ y(x) = -C1 \left({}_2F_1\left(-\frac{\nu}{2}, \frac{\nu}{2} + \frac{1}{2}; \frac{1}{2}; \frac{\cos(2x)}{2} + \frac{1}{2}\right) \right)^2 + -C2 (\cos(2x) + 1) \left({}_2F_1\left(1 + \frac{\nu}{2}, \frac{1}{2} - \frac{\nu}{2}; \frac{3}{2}; \frac{\cos(2x)}{2}\right) \right) \right\}$$

2.1531 ODE No. 1531

$$A(x) (f(x)y''(x) + g(x)y'(x) + h(x)y(x)) + f'(x)y''(x) + f(x)y^{(3)}(x) + g'(x)y'(x) + g(x)y''(x) + y(x)h'(x) + h(x)y(x)) = 0$$

✗ **Mathematica** : cpu = 0.0316928 (sec), leaf count = 0 , could not solve

DSolve[y[x]*Derivative[1][h][x] + h[x]*Derivative[1][y][x] + Derivative[1][g][x]*Deriv

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{ f(x) \frac{d^3}{dx^3} Y(x) + \left(\frac{d}{dx} f(x) + g(x) + A(x) f(x)\right) \frac{d^2}{dx^2} Y(x) + \left(\frac{d}{dx} g(x) + h(x) + A(x) g(x)\right) \frac{d}{dx} Y(x) + h(x) Y(x) \right\}\right) \right\}$$

2.1532 ODE No. 1532

$$ny(x) + y^{(3)}(x) + xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0175124 (sec), leaf count = 103

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 x {}_1F_2\left(\frac{n}{3} + \frac{1}{3}; \frac{2}{3}, \frac{4}{3}; -\frac{x^3}{9}\right)}{3^{2/3}} + c_1 {}_1F_2\left(\frac{n}{3}; \frac{1}{3}, \frac{2}{3}; -\frac{x^3}{9}\right) + \frac{c_3 x^2 {}_1F_2\left(\frac{n}{3} + \frac{2}{3}; \frac{4}{3}, \frac{5}{3}; -\frac{x^3}{9}\right)}{3\sqrt[3]{3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.098 (sec), leaf count = 58

$$\left\{ y(x) = -C1 {}_1F_2\left(\frac{n}{3}; \frac{1}{3}, \frac{2}{3}; -\frac{x^3}{9}\right) - C2 x {}_1F_2\left(\frac{1}{3} + \frac{n}{3}; \frac{2}{3}, \frac{4}{3}; -\frac{x^3}{9}\right) - C3 x^2 {}_1F_2\left(\frac{2}{3} + \frac{n}{3}; \frac{4}{3}, \frac{5}{3}; -\frac{x^3}{9}\right) \right\}$$

2.1533 ODE No. 1533

$$-ny(x) + y^{(3)}(x) - xy'(x) = 0$$

✓ **Mathematica** : cpu = 0.0184743 (sec), leaf count = 113

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[3]{-1} c_2 x {}_1F_2\left(\frac{n}{3} + \frac{1}{3}; \frac{2}{3}, \frac{4}{3}; \frac{x^3}{9}\right)}{3^{2/3}} + c_1 {}_1F_2\left(\frac{n}{3}; \frac{1}{3}, \frac{2}{3}; \frac{x^3}{9}\right) + \frac{(-1)^{2/3} c_3 x^2 {}_1F_2\left(\frac{n}{3} + \frac{2}{3}; \frac{4}{3}, \frac{5}{3}; \frac{x^3}{9}\right)}{3\sqrt[3]{3}} \right\} \right\}$$

✓ **Maple** : cpu = 0.095 (sec), leaf count = 58

$$\left\{ y(x) = -C1 {}_1F_2\left(\frac{n}{3}; \frac{1}{3}, \frac{2}{3}; \frac{x^3}{9}\right) - C2 x {}_1F_2\left(\frac{1}{3} + \frac{n}{3}; \frac{2}{3}, \frac{4}{3}; \frac{x^3}{9}\right) - C3 x^2 {}_1F_2\left(\frac{2}{3} + \frac{n}{3}; \frac{4}{3}, \frac{5}{3}; \frac{x^3}{9}\right) \right\}$$

2.1534 ODE No. 1534

$$y^{(4)}(x) = 0$$

✓ **Mathematica** : cpu = 0.00490568 (sec), leaf count = 24

$$\left\{ \left\{ y(x) \rightarrow c_4 x^3 + c_3 x^2 + c_2 x + c_1 \right\} \right\}$$

✓ **Maple** : cpu = 0.01 (sec), leaf count = 21

$$\left\{ y(x) = \frac{-C1 x^3}{6} + \frac{x^2 - C2}{2} + -C3 x + -C4 \right\}$$

2.1535 ODE No. 1535

$$-f(x) + y^{(4)}(x) + 4y(x) = 0$$

✓ **Mathematica** : cpu = 1.33622 (sec), leaf count = 219

$$\left\{ \left\{ y(x) \rightarrow e^{-x} \left(\cos(x) \int_1^x \frac{1}{8} e^{K[1]} f(K[1]) (\cos(K[1]) - \sin(K[1])) (\sin^2(K[1]) + \cos^2(K[1])) dK[1] + e^{2x} \right) \right\} \right.$$

✓ **Maple** : cpu = 0.018 (sec), leaf count = 36

$$\left\{ y(x) = \frac{f}{4} + _C1 e^x \cos(x) + _C2 e^x \sin(x) + _C3 e^{-x} \cos(x) + _C4 e^{-x} \sin(x) \right\}$$

2.1536 ODE No. 1536

$$\lambda y(x) + y^{(4)}(x) = 0$$

✓ **Mathematica** : cpu = 0.0064464 (sec), leaf count = 76

$$\left\{ \left\{ y(x) \rightarrow c_1 e^{(-1)^{3/4} \sqrt[4]{\lambda} x} + c_2 e^{-\sqrt[4]{-1} \sqrt[4]{\lambda} x} + c_3 e^{-(-1)^{3/4} \sqrt[4]{\lambda} x} + c_4 e^{\sqrt[4]{-1} \sqrt[4]{\lambda} x} \right\} \right\}$$

✓ **Maple** : cpu = 0.014 (sec), leaf count = 50

$$\left\{ y(x) = _C1 e^{-i \sqrt[4]{-\lambda} x} + _C2 e^{i \sqrt[4]{-\lambda} x} + _C3 e^{-\sqrt[4]{-\lambda} x} + _C4 e^{\sqrt[4]{-\lambda} x} \right\}$$

2.1537 ODE No. 1537

$$-16e^{x^2} x^4 + y^{(4)}(x) - 12y''(x) + 12y(x) = 0$$

✓ **Mathematica** : cpu = 0.842457 (sec), leaf count = 1722

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{12} e^{-\left(\sqrt{2(3-\sqrt{6})} - x\right)x - \sqrt{2(3+\sqrt{6})}x - \sqrt{2(3-\sqrt{6})}x} \left(-2\sqrt{3+\sqrt{6}} e^{\sqrt{2(3+\sqrt{6})}x + 2\sqrt{2(3-\sqrt{6})}x} x^3 + 2\sqrt{3+\sqrt{6}} \right) \right\} \right.$$

✓ **Maple** : cpu = 0.135 (sec), leaf count = 67

$$\left\{ y(x) = e^{x^2} + _C1 e^{\sqrt{6-2\sqrt{6}}x} + _C2 e^{\sqrt{6+2\sqrt{6}}x} + _C3 e^{-\sqrt{6-2\sqrt{6}}x} + _C4 e^{-\sqrt{6+2\sqrt{6}}x} \right\}$$

2.1538 ODE No. 1538

$$a^4 y(x) + 2a^2 y''(x) - \cosh(ax) + y^{(4)}(x) = 0$$

✓ **Mathematica** : cpu = 0.260899 (sec), leaf count = 66

$$\left\{ \left\{ y(x) \rightarrow \frac{\cos^2(ax) \cosh(ax) + \sin^2(ax) \cosh(ax)}{4a^4} + c_3 \sin(ax) + c_4 x \sin(ax) + c_1 \cos(ax) + c_2 x \cos(ax) \right\} \right\}$$

✓ **Maple** : cpu = 0.423 (sec), leaf count = 46

$$\left\{ y(x) = \frac{e^{ax} + e^{-ax}}{8a^4} + _C1 \cos(ax) + _C2 \sin(ax) + _C3 \cos(ax) x + _C4 \sin(ax) x \right\}$$

2.1539 ODE No. 1539

$$a^4 \lambda y(x) + a^2(\lambda + 1)y''(x) + y^{(4)}(x) = 0$$

✓ **Mathematica** : cpu = 0.00763034 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow c_2 \sin(a\sqrt{\lambda}x) + c_1 \cos(a\sqrt{\lambda}x) + c_4 \sin(ax) + c_3 \cos(ax) \right\} \right\}$$

✓ **Maple** : cpu = 0.029 (sec), leaf count = 35

$$\left\{ y(x) = _C1 \sin(ax) + _C2 \cos(ax) + _C3 \sin(a\sqrt{\lambda}x) + _C4 \cos(a\sqrt{\lambda}x) \right\}$$

2.1540 ODE No. 1540

$$a(bx - 1)y''(x) + aby'(x) + \lambda y(x) + y^{(4)}(x) = 0$$

✗ **Mathematica** : cpu = 0.410852 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{\lambda y(x) + aby'(x) + a(bx - 1)y''(x) + y^{(4)}(x) = 0, y(0) = c_1, y'(0) = c_2\}) \right\} \right\}$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \text{DESol} \left(\left\{ \lambda _Y(x) + ab \frac{d}{dx} _Y(x) + a(bx - 1) \frac{d^2}{dx^2} _Y(x) + \frac{d^4}{dx^4} _Y(x) \right\}, \{ _Y(x) \} \right) \right\}$$

2.1541 ODE No. 1541

$$y''(x)(ax^2 + b\lambda + c) + y(x)(ax^2 + \beta\lambda + \gamma) + y^{(4)}(x) = 0$$

✘ **Mathematica** : cpu = 80.227 (sec), leaf count = 0 , DifferentialRoot result

{ {y(x) → DifferentialRoot({y, x}, {(ax² + βλ + γ)y(x) + (ax² + c + bλ)y''(x) + y⁽⁴⁾(x) = 0, y(0) = c₁

✘ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{ (ax^2 + \beta\lambda + \gamma) _Y(x) + (ax^2 + b\lambda + c) \frac{d^2}{dx^2} _Y(x) + \frac{d^4}{dx^4} _Y(x) \right\}, \{ _Y(x) \} \right) \right\}$$

2.1542 ODE No. 1542

$$ay''(x)\wp(x; g2, g3) + by'(x)\wp'(x; g2, g3) + y(x) \left(c \left(6\wp(x; g2, g3)^2 - \frac{g2}{2} \right) + d \right) + y^{(4)}(x) = 0$$

✘ **Mathematica** : cpu = 0.0282207 (sec), leaf count = 0 , could not solve

DSolve[(d + c*(-g2/2 + 6*WeierstrassP[x, {g2, g3}]^2))*y[x] + b*WeierstrassPPrime[x, {g2, g3}]]

✘ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{ \frac{d^4}{dx^4} _Y(x) + a WeierstrassP(x, g2, g3) \frac{d^2}{dx^2} _Y(x) + b WeierstrassPPrime(x, g2, g3) _Y'(x) \right\}, \{ _Y(x) \} \right) \right\}$$

2.1543 ODE No. 1543

$$-y''(x)(a + 12k^2\text{sn}(z|x)^2) + y(x)(\alpha\text{sn}(z|x)^2 + \beta) + by'(x) + y^{(4)}(x) = 0$$

✘ **Mathematica** : cpu = 0.0944007 (sec), leaf count = 0 , could not solve

DSolve[(beta + alpha*JacobiSN[z, x]^2)*y[x] + b*Derivative[1][y][x] - (a + 12*k^2*JacobiSN[z, x]^2)*y''[x] + y[x]^4]

✘ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol\left(\left\{ \frac{d^4}{dx^4} _Y(x) + (-12k^2(\text{JacobiSN}(z, x))^2 - a) \frac{d^2}{dx^2} _Y(x) + b \frac{d}{dx} _Y(x) + (\alpha(\text{JacobiSN}(z, x))^2 + \beta) _Y(x) \right\}, \{ _Y(x) \} \right) \right\}$$

2.1544 ODE No. 1544

$$y(x) (3f''(x) + 3f(x)^2) + 10f'(x)y'(x) + 10f(x)y''(x) + y^{(4)}(x) = 0$$

✗ **Mathematica** : cpu = 0.0144812 (sec), leaf count = 0 , could not solve

DSolve[10*Derivative[1][f][x]*Derivative[1][y][x] + y[x]*(3*f[x]^2 + 3*Derivative[2][f][x]) + 10*f[x]*Derivative[1][y][x] + 10*f[x]*Derivative[2][y][x] + y[x]^4 == 0, {y[x], f[x]}, x]

✓ **Maple** : cpu = 0.017 (sec), leaf count = 41

$$\left\{ y(x) = \sum_{a=1}^4 e^{\text{RootOf}(-Z^4 + 10 f Z^2 + 10 df Z + 3 f^2 + 3 ddf, \text{index} = a)x} _C_a \right\}$$

2.1545 ODE No. 1545

$$y^{(4)}(x) + 2y^{(3)}(x) - 3y''(x) - 4y'(x) + 4y(x) - 32 \sin(2x) + 24 \cos(2x) = 0$$

✓ **Mathematica** : cpu = 0.171871 (sec), leaf count = 40

$$\left\{ \{y(x) \rightarrow c_1 e^{-2x} + c_2 e^{-2x} x + c_3 e^x + c_4 e^x x + \sin(2x)\} \right\}$$

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

$$\{y(x) = \sin(2x) + _C1 e^x + _C2 e^{-2x} + _C3 x e^x + _C4 e^{-2x} x\}$$

2.1546 ODE No. 1546

$$a^4 x^4 y(x) + 4a^3 x^3 y'(x) + 6a^2 x^2 y''(x) + 4axy^{(3)}(x) + y^{(4)}(x) = 0$$

✓ **Mathematica** : cpu = 0.671423 (sec), leaf count = 301

$$\left\{ \left\{ y(x) \rightarrow \frac{2(\sqrt{6}-3) \sqrt{-(\sqrt{6}-3)} a c_3 \exp\left(-\frac{ax^2}{2} - \sqrt{-(\sqrt{6}-3)} ax - \frac{(-3+\sqrt{3}+\sqrt{6})ax}{\sqrt{-(\sqrt{6}-3)a}}\right)}{(-3-\sqrt{3}+\sqrt{6})(-3+\sqrt{3}+\sqrt{6})a} + \frac{2(\sqrt{6}-3)}{\dots} \right\} \right\}$$

✓ **Maple** : cpu = 0.052 (sec), leaf count = 81

$$\left\{ y(x) = e^{-\frac{ax^2}{2}} \left(_C1 e^{-\sqrt{-a\sqrt{6}+3}ax} + _C2 e^{\sqrt{-a\sqrt{6}+3}ax} + _C3 e^{-\sqrt{a\sqrt{6}+3}ax} + _C4 e^{\sqrt{a\sqrt{6}+3}ax} \right) \right\}$$

2.1547 ODE No. 1547

$$3y(x) (2g(x)f'(x) + 5f(x)g'(x) + 6f(x)^2g(x) + g''(x) + 3g(x)^2) + y''(x) (4f'(x) + 11f(x)^2 + 10g(x)) + y'(x) (2g(x)f'(x) + 5f(x)g'(x) + 6f(x)^2g(x) + g''(x) + 3g(x)^2) = 0$$

✗ **Mathematica** : cpu = 0.0334873 (sec), leaf count = 0 , could not solve

$$\text{DSolve}[\text{Derivative}[1][y][x]*(6*f[x]^3 + 30*f[x]*g[x] + 7*f[x]*\text{Derivative}[1][f][x] + 10*g[x]^2) + y''[x]*(4*f'[x] + 11*f[x]^2 + 10*g[x]) + y'[x]*(2*g[x]*f'[x] + 5*f[x]*g'[x] + 6*f[x]^2*g[x] + g''[x] + 3*g[x]^2) = 0, y[x], x]$$

✓ **Maple** : cpu = 0.023 (sec), leaf count = 87

$$\left\{ y(x) = \sum_{a=1}^4 e^{\text{RootOf}(-Z^4 + 6f_Z^3 + (11f^2 + 4df + 10g)_Z^2 + (6f^3 + 7df + 30fg + ddf + 10dg)_Z + 18f^2g + 6dfg + 15dgg + 9g^2 + 3ddg)} \right\}$$

2.1548 ODE No. 1548

$$4y^{(4)}(x) - 12y^{(3)}(x) + 11y''(x) - 3y'(x) - 4\cos(x) = 0$$

✓ **Mathematica** : cpu = 0.086413 (sec), leaf count = 50

$$\left\{ \left\{ y(x) \rightarrow 2c_1 e^{x/2} + \frac{2}{3}c_2 e^{3x/2} + c_3 e^x + c_4 + \frac{18 \sin(x)}{65} - \frac{14 \cos(x)}{65} \right\} \right\}$$

✓ **Maple** : cpu = 0.067 (sec), leaf count = 32

$$\left\{ y(x) = -\frac{14 \cos(x)}{65} + \frac{18 \sin(x)}{65} + _C1 e^x + 2_C2 e^{x/2} + \frac{2_C3}{3} e^{\frac{3x}{2}} + _C4 \right\}$$

2.1549 ODE No. 1549

$$xy^{(4)}(x) + 5y^{(3)}(x) - 24 = 0$$

✓ **Mathematica** : cpu = 0.0127891 (sec), leaf count = 34

$$\left\{ \left\{ y(x) \rightarrow c_4 x^2 - \frac{c_1}{24x^2} + c_3 x + c_2 + \frac{4x^3}{5} \right\} \right\}$$

✓ **Maple** : cpu = 0.022 (sec), leaf count = 26

$$\left\{ y(x) = -\frac{C1}{24x^2} + \frac{4x^3}{5} + \frac{x^2 C2}{2} + _C3 x + _C4 \right\}$$

2.1550 ODE No. 1550

$$12x^3y''(x) - (6x^2 + 1)y^{(3)}(x) - (9x^2 - 7)x^2y'(x) + 2(x^2 - 3)x^3y(x) + xy^{(4)}(x) = 0$$

✓ **Mathematica** : cpu = 4.95718 (sec), leaf count = 262

$$\left\{ \left\{ y(x) \rightarrow c_3 e^{\frac{x^2}{2}} \int_1^x \frac{e^{\frac{K[1]^2}{2}} K[1] \left(\int \frac{U\left(\frac{1}{20}(-5-9\sqrt{5}), -\frac{1}{2}, \frac{1}{2}\sqrt{5}K[1]^2\right) \exp\left(\frac{1}{2}\left(-\frac{1}{2}K[1]^2 - 2\log(K[1])\right) - \frac{1}{4}\sqrt{5}K[1]^2\right)}{\sqrt{K[1]} \sqrt[4]{K[1]^2}} dK[1]} \right)}{\sqrt{2}} dx \right. \right.$$

✓ **Maple** : cpu = 0.703 (sec), leaf count = 159

$$\left\{ y(x) = -C1 e^{x^2} + -C2 e^{\frac{x^2}{2}} + -C3 \left(-e^{x^2} \int 1M_{\frac{9\sqrt{5}}{20}, \frac{3}{4}} \left(\frac{\sqrt{5}x^2}{2} \right) e^{-\frac{x^2}{4}} x^{-\frac{3}{2}} dx + \int 1M_{\frac{9\sqrt{5}}{20}, \frac{3}{4}} \left(\frac{\sqrt{5}x^2}{2} \right) e^{\frac{x^2}{4}} dx \right) \right.$$

2.1551 ODE No. 1551

$$-2(\nu^2x^2 + 6)y''(x) + \nu^2(\nu^2x^2 + 4)y(x) + x^2y^{(4)}(x) = 0$$

✓ **Mathematica** : cpu = 0.417322 (sec), leaf count = 110

$$\left\{ \left\{ y(x) \rightarrow \frac{c_3(1-x)e^{-\nu x}(\nu^2x^2 + \nu^2x + \nu^2 + 6\nu x + 6\nu + 15)}{x} + \frac{c_4(1-x)e^{\nu x}(\nu^2x^2 + \nu^2x + \nu^2 - 6\nu x - 6\nu + 15)}{x} \right. \right.$$

✓ **Maple** : cpu = 0.283 (sec), leaf count = 63

$$\left\{ y(x) = \frac{-C1 e^{x\nu}}{x} + \frac{-C2 e^{-x\nu}}{x} + -C3 e^{x\nu}(\nu^2x^2 - 6x\nu + 15) + -C4 e^{-x\nu}(\nu^2x^2 + 6x\nu + 15) \right\}$$

2.1552 ODE No. 1552

$$ay(x) - bx^2 + x^2y^{(4)}(x) + 2xy^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 300.001 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.088 (sec), leaf count = 89

$$\left\{ y(x) = \frac{bx^2}{a} + _C1 \sqrt{x} J_1(2 \sqrt[4]{-a} \sqrt{x}) + _C2 \sqrt{x} Y_1(2 \sqrt[4]{-a} \sqrt{x}) + _C3 \sqrt{x} J_1\left(2 \sqrt{-\sqrt{-a} \sqrt{x}}\right) + _C4 \right\}$$

2.1553 ODE No. 1553

$$x^2y^{(4)}(x) + 4xy^{(3)}(x) + 2y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0251523 (sec), leaf count = 29

$$\{ \{ y(x) \rightarrow c_1(-x) + c_4x + c_1x \log(x) - c_2 \log(x) + c_3 \} \}$$

✓ **Maple** : cpu = 0.012 (sec), leaf count = 18

$$\{ y(x) = _C1 x + _C2 x \ln(x) + _C3 + _C4 \ln(x) \}$$

2.1554 ODE No. 1554

$$x^2y^{(4)}(x) + 6xy^{(3)}(x) + 6y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0270383 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow c_4x + \frac{1}{2} \left(\frac{c_2}{x} - 2c_1 \log(x) \right) + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.013 (sec), leaf count = 18

$$\left\{ y(x) = _C1 + _C2 \ln(x) + \frac{_C3}{x} + _C4 x \right\}$$

2.1555 ODE No. 1555

$$\lambda^2(-y(x)) + x^2y^{(4)}(x) + 6xy^{(3)}(x) + 6y''(x) = 0$$

✓ **Mathematica** : cpu = 0.064039 (sec), leaf count = 156

$$\left\{ \left\{ y(x) \rightarrow c_4 G_{0,4}^{2,0} \left(\frac{\lambda^2 x^2}{16} \mid -\frac{1}{2}, \frac{1}{2}, 0, 0 \right) + c_2 G_{0,4}^{2,0} \left(\frac{\lambda^2 x^2}{16} \mid 0, 0, -\frac{1}{2}, \frac{1}{2} \right) + \frac{c_1 \left(J_1(2\sqrt{\lambda}\sqrt{x}) + I_1(2\sqrt{\lambda}\sqrt{x}) \right)}{2\sqrt{\lambda}\sqrt{x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.165 (sec), leaf count = 69

$$\left\{ y(x) = -C1 J_1(2\sqrt{\lambda}\sqrt{x}) \frac{1}{\sqrt{x}} + -C2 Y_1(2\sqrt{\lambda}\sqrt{x}) \frac{1}{\sqrt{x}} + -C3 J_1(2\sqrt{-\lambda}\sqrt{x}) \frac{1}{\sqrt{x}} + -C4 Y_1(2\sqrt{-\lambda}\sqrt{x}) \frac{1}{\sqrt{x}} \right\}$$

2.1556 ODE No. 1556

$$x^2y^{(4)}(x) + 8xy^{(3)}(x) + 12y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0231857 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{6} \left(\frac{c_1}{x^2} + \frac{3c_2}{x} \right) + c_4 x + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.016 (sec), leaf count = 19

$$\left\{ y(x) = -C1 + \frac{C2}{x^2} + \frac{C3}{x} + -C4 x \right\}$$

2.1557 ODE No. 1557

$$\lambda^2(-y(x)) + x^2y^{(4)}(x) + 8xy^{(3)}(x) + 12y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0639379 (sec), leaf count = 146

$$\left\{ \left\{ y(x) \rightarrow c_4 G_{0,4}^{2,0} \left(\frac{\lambda^2 x^2}{16} \mid -1, 0, -\frac{1}{2}, \frac{1}{2} \right) + c_2 G_{0,4}^{2,0} \left(\frac{\lambda^2 x^2}{16} \mid -\frac{1}{2}, \frac{1}{2}, -1, 0 \right) - \frac{3ic_1 \left(I_2(2\sqrt{\lambda}\sqrt{x}) - J_2(2\sqrt{\lambda}\sqrt{x}) \right)}{4\lambda x} \right\} \right\}$$

✓ **Maple** : cpu = 0.124 (sec), leaf count = 69

$$\left\{ y(x) = \frac{C1}{x} J_2(2\sqrt{\lambda}\sqrt{x}) + \frac{C2}{x} Y_2(2\sqrt{\lambda}\sqrt{x}) + \frac{C3}{x} J_2(2\sqrt{-\lambda}\sqrt{x}) + \frac{C4}{x} Y_2(2\sqrt{-\lambda}\sqrt{x}) \right\}$$

2.1558 ODE No. 1558

$$-\frac{1}{16}b^4y(x) + x(2n - 2\nu + 4)y^{(3)}(x) + (n - \nu + 1)(n - \nu + 2)y''(x) + x^2y^{(4)}(x) = 0$$

✓ **Mathematica** : cpu = 0.166633 (sec), leaf count = 319

$$\left\{ \left\{ y(x) \rightarrow c_4 i^{-n+\nu+1} 2^{3n-3\nu-3} b^{2(-n+\nu+1)+n-\nu-2} x^{\frac{1}{2}(n-\nu-2)-n+\nu+1} \Gamma(-n+\nu+2) (I_{\nu-n}(b\sqrt{x}) - J_{\nu-n}(b\sqrt{x})) \right\} \right\}$$

✓ **Maple** : cpu = 0.174 (sec), leaf count = 93

$$\{y(x) = _C1 x^{-\frac{n}{2}+\frac{\nu}{2}} I_{n-\nu}(b\sqrt{x}) + _C2 x^{-\frac{n}{2}+\frac{\nu}{2}} J_{n-\nu}(b\sqrt{x}) + _C3 x^{-\frac{n}{2}+\frac{\nu}{2}} K_{n-\nu}(b\sqrt{x}) + _C4 x^{-\frac{n}{2}+\frac{\nu}{2}} Y_{n-\nu}\}$$

2.1559 ODE No. 1559

$$a^4(-x^3)y(x) + x^3y^{(4)}(x) + 2x^2y^{(3)}(x) - xy''(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.268011 (sec), leaf count = 100

$$\left\{ \left\{ y(x) \rightarrow c_4 G_{0,4}^{2,0} \left(\frac{a^4 x^4}{256} \mid 0, 0, \frac{1}{2}, \frac{1}{2} \right) + c_2 G_{0,4}^{2,0} \left(\frac{a^4 x^4}{256} \mid \frac{1}{2}, \frac{1}{2}, 0, 0 \right) + \frac{1}{8} i c_1 (I_0(ax) - J_0(ax)) + \frac{1}{2} c_3 (J_0(ax) - Y_0(ax)) \right\} \right\}$$

✓ **Maple** : cpu = 0.168 (sec), leaf count = 33

$$\{y(x) = _C1 I_0(ax) + _C2 J_0(ax) + _C3 K_0(ax) + _C4 Y_0(ax)\}$$

2.1560 ODE No. 1560

$$x^3y^{(4)}(x) + 6x^2y^{(3)}(x) + 6xy''(x) = 0$$

✓ **Mathematica** : cpu = 0.0217717 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow c_4 x + \frac{1}{2} \left(\frac{c_2}{x} - 2c_1 \log(x) \right) + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.014 (sec), leaf count = 18

$$\left\{ y(x) = _C1 + _C2 \ln(x) + \frac{_C3}{x} + _C4 x \right\}$$

2.1561 ODE No. 1561

$$y(x) (ax^4 + (n-2)n(n+1)(n+3)) - 2n(n+1)x^2y''(x) + 4n(n+1)xy'(x) + x^4y^{(4)}(x) = 0$$

✓ **Mathematica** : cpu = 3.95074 (sec), leaf count = 400

$$\left\{ \left\{ y(x) \rightarrow c_1 \left(-2^{n-\frac{5}{2}} \right) \sqrt{x} a^{\frac{2-n}{4} + \frac{1}{4}(n-\frac{3}{2})} \Gamma\left(\frac{3}{2} - n\right) \left(\cos\left(\frac{3}{4}\pi\left(\frac{3}{2} - n\right)\right) \text{ber}_{-n-\frac{1}{2}}(\sqrt[4]{ax}) + \sin\left(\frac{3}{4}\pi\left(\frac{3}{2} - n\right)\right) \text{ber}_{-n-\frac{1}{2}}(\sqrt[4]{ax}) \right) \right. \right.$$

✓ **Maple** : cpu = 0.275 (sec), leaf count = 77

$$\left\{ y(x) = _C1 \sqrt{x} J_{n+\frac{1}{2}}(\sqrt[4]{-ax}) + _C2 \sqrt{x} Y_{n+\frac{1}{2}}(\sqrt[4]{-ax}) + _C3 \sqrt{x} J_{n+\frac{1}{2}}\left(\sqrt{-\sqrt{-ax}}\right) + _C4 \sqrt{x} Y_{n+\frac{1}{2}}\left(\sqrt{-\sqrt{-ax}}\right) \right.$$

2.1562 ODE No. 1562

$$-(4n^2 - 1)x^2y''(x) + (4n^2 - 1)xy'(x) + x^4y^{(4)}(x) - 4x^4y(x) + 4x^3y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 1.0845 (sec), leaf count = 140

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_0F_3\left(\frac{1}{2}, 1 - \frac{n}{2}, \frac{n}{2} + 1; \frac{x^4}{64}\right) + \frac{1}{8} i c_2 x^2 {}_0F_3\left(\frac{3}{2}, \frac{3}{2} - \frac{n}{2}, \frac{n}{2} + \frac{3}{2}; \frac{x^4}{64}\right) + c_3 \left(\frac{i}{2}\right)^{-n} \Gamma(1-n)^2 \right. \right.$$

✓ **Maple** : cpu = 0.398 (sec), leaf count = 93

$$\left\{ y(x) = _C1 J_n\left(\left(\frac{1}{2} - \frac{i}{2}\right)\sqrt{2x}\right) J_n\left(\left(\frac{1}{2} + \frac{i}{2}\right)\sqrt{2x}\right) + _C2 J_n\left(\left(\frac{1}{2} - \frac{i}{2}\right)\sqrt{2x}\right) Y_n\left(\left(\frac{1}{2} + \frac{i}{2}\right)\sqrt{2x}\right) \right.$$

2.1563 ODE No. 1563

$$(4n^2 - 4x^4 - 1)y(x) - (4n^2 - 1)x^2y''(x) - (4n^2 - 1)xy'(x) + x^4y^{(4)}(x) + 4x^3y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 1.85956 (sec), leaf count = 232

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[4]{-1} c_2 x {}_0F_3\left(\frac{3}{2}, 1 - \frac{n}{2}, \frac{n}{2} + 1; \frac{x^4}{64}\right)}{2\sqrt{2}} - \frac{2(-1)^{3/4} \sqrt{2} c_1 {}_0F_3\left(\frac{1}{2}, \frac{1}{2} - \frac{n}{2}, \frac{n}{2} + \frac{1}{2}; \frac{x^4}{64}\right)}{x} + c_3 (-1)^{\frac{1}{4}(1-2n)} \right. \right.$$

✓ **Maple** : cpu = 0.3 (sec), leaf count = 83

$$\left\{ y(x) = _C1 x((\text{ber}_n(x))^2 + (\text{bei}_n(x))^2) + _C2 x((\text{ber}_{-n}(x))^2 + (\text{bei}_{-n}(x))^2) + _C3 x {}_0F_3\left(\frac{3}{2}, 1 - \frac{n}{2}, \right.$$

2.1564 ODE No. 1564

$$-(12n^2 + 4x^4 - 3)y(x) - (4n^2 + 3)x^2 y''(x) + (12n^2 - 3)xy'(x) + x^4 y^{(4)}(x) + 4x^3 y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 1.31805 (sec), leaf count = 230

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt[4]{-1} c_1 x {}_0F_3\left(\frac{1}{2}, \frac{3}{2} - \frac{n}{2}, \frac{n}{2} + \frac{3}{2}; \frac{x^4}{64}\right) + c_3 (-1)^{\frac{1}{4}(-2n-1)} 2^{2n+\frac{1}{2}(2n+1)+1} x^{-2n-1} {}_0F_3\left(1-n, \frac{1}{2} - \frac{n}{2}, \frac{n}{2}\right)}{2\sqrt{2}} \right. \right.$$

✓ **Maple** : cpu = 0.273 (sec), leaf count = 164

$$\left\{ y(x) = \frac{-C1 ((\text{ber}_n(x))^2 + (\text{bei}_n(x))^2)}{x} + {}_2F_3\left(\frac{3}{2}, 2 - \frac{n}{2}, 2 + \frac{n}{2}; \frac{x^4}{64}\right) + {}_2F_3\left(\frac{1}{2}, \frac{3}{2} - \frac{n}{2}, \frac{n}{2}\right) \right.$$

2.1565 ODE No. 1565

$$(x(-\rho^2 - \sigma^2 + 1) + 16x^3)y'(x) + y(x)(\rho^2\sigma^2 + 8x^2) + (x^2(-\rho^2 - \sigma^2 + 7) + 4x^4)y''(x) + x^4 y^{(4)}(x) + 6x^3 y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.52296 (sec), leaf count = 242

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{-\rho} {}_2F_3\left(\frac{1}{2} - \frac{\rho}{2}, 1 - \frac{\rho}{2}; 1 - \rho, -\frac{\rho}{2} - \frac{\sigma}{2} + 1, -\frac{\rho}{2} + \frac{\sigma}{2} + 1; -x^2\right) + c_3 x^{-\sigma} {}_2F_3\left(\frac{1}{2} - \frac{\sigma}{2}, 1 - \frac{\sigma}{2}; 1 - \sigma, -\frac{\sigma}{2} - \frac{\rho}{2} + 1, -\frac{\sigma}{2} + \frac{\rho}{2} + 1; -x^2\right) \right. \right.$$

✓ **Maple** : cpu = 0.403 (sec), leaf count = 85

$$\left\{ y(x) = {}_2F_3\left(\frac{\sigma}{2} + \frac{\rho}{2}, \frac{\sigma}{2} + \frac{\rho}{2}; 1 - \rho, -\frac{\rho}{2} - \frac{\sigma}{2} + 1, -\frac{\rho}{2} + \frac{\sigma}{2} + 1; -x^2\right) + {}_2F_3\left(\frac{1}{2} - \frac{\sigma}{2}, 1 - \frac{\sigma}{2}; 1 - \sigma, -\frac{\sigma}{2} - \frac{\rho}{2} + 1, -\frac{\sigma}{2} + \frac{\rho}{2} + 1; -x^2\right) \right.$$

2.1566 ODE No. 1566

$$(x(-2\mu^2 - 2\nu^2 + 1) + 16x^3)y'(x) + y(x)((\mu^2 - \nu^2)^2 + 8x^2) + (x^2(-2\mu^2 - 2\nu^2 + 7) + 4x^4)y''(x) + x^4 y^{(4)}(x) + 6x^3 y^{(3)}(x) = 0$$

✓ **Mathematica** : cpu = 0.626415 (sec), leaf count = 238

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{-\mu-\nu} {}_2F_3\left(-\frac{\mu}{2} - \frac{\nu}{2} + \frac{1}{2}, -\frac{\mu}{2} - \frac{\nu}{2} + 1; 1 - \mu, 1 - \nu, -\mu - \nu + 1; -x^2\right) + c_2 x^{\mu-\nu} {}_2F_3\left(\frac{\mu}{2} - \frac{\nu}{2}, \frac{\mu}{2} - \frac{\nu}{2} + 1; 1 - \mu, 1 - \nu, -\mu - \nu + 1; -x^2\right) \right. \right.$$

✓ **Maple** : cpu = 0.346 (sec), leaf count = 37

$$\left\{ y(x) = {}_2F_3\left(\frac{\mu}{2} - \frac{\nu}{2}, \frac{\mu}{2} - \frac{\nu}{2} + 1; 1 - \mu, 1 - \nu, -\mu - \nu + 1; -x^2\right) + {}_2F_3\left(-\frac{\mu}{2} - \frac{\nu}{2} + \frac{1}{2}, -\frac{\mu}{2} - \frac{\nu}{2} + 1; 1 - \mu, 1 - \nu, -\mu - \nu + 1; -x^2\right) \right.$$

2.1567 ODE No. 1567

$$x^4 y^{(4)}(x) + 8x^3 y^{(3)}(x) + 12x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0221464 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{6} \left(\frac{c_1}{x^2} + \frac{3c_2}{x} \right) + c_4 x + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.015 (sec), leaf count = 19

$$\left\{ y(x) = _C1 + \frac{_C2}{x^2} + \frac{_C3}{x} + _C4 x \right\}$$

2.1568 ODE No. 1568

$$ay(x) + x^4 y^{(4)}(x) + 8x^3 y^{(3)}(x) + 12x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0129222 (sec), leaf count = 122

$$\left\{ \left\{ y(x) \rightarrow c_1 x^{\frac{1}{2}(-\sqrt{5-4\sqrt{1-a}}-1)} + c_2 x^{\frac{1}{2}(\sqrt{5-4\sqrt{1-a}}-1)} + c_3 x^{\frac{1}{2}(-\sqrt{4\sqrt{1-a}+5}-1)} + c_4 x^{\frac{1}{2}(\sqrt{4\sqrt{1-a}+5}-1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.027 (sec), leaf count = 89

$$\left\{ y(x) = _C1 x^{-\frac{1}{2}-\frac{1}{2}\sqrt{5-4\sqrt{1-a}}} + _C2 x^{-\frac{1}{2}+\frac{1}{2}\sqrt{5-4\sqrt{1-a}}} + _C3 x^{-\frac{1}{2}-\frac{1}{2}\sqrt{5+4\sqrt{1-a}}} + _C4 x^{-\frac{1}{2}+\frac{1}{2}\sqrt{5+4\sqrt{1-a}}} \right\}$$

2.1569 ODE No. 1569

$$xy'(x) ((2a - 1)C0 + 4b^2B0c^2x^{2c}) + (6-4a)x^3y^{(3)}(x) + x^2y''(x) (A0 + 4b^2c^2x^{2c}) + y(x) (4b^2c^2D0x^{2c} + E0) +$$

✗ **Mathematica** : cpu = 301.027 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.505 (sec), leaf count = 81

$$\{y(x) = _C1 x^a J_\mu(x^c b) J_\nu(x^c b) + _C2 x^a J_\mu(x^c b) Y_\nu(x^c b) + _C3 x^a Y_\mu(x^c b) J_\nu(x^c b) + _C4 x^a Y_\nu(x^c b) Y_\mu(x^c b)\}$$

2.1570 ODE No. 1570

$$y(x) \left((a^2 - c^2\nu^2) (a^2 + 4ac - c^2\nu^2 + 4c^2) - b^4 c^4 x^{4c} \right) + x^2 (2a^2 + 4(a + c - 1)^2 + 4(a - 1)(c - 1) - 2c^2\nu^2 -$$

✓ **Mathematica** : cpu = 0.148337 (sec), leaf count = 470

$$\left\{ \left\{ y(x) \rightarrow c_1 \Gamma(1 - \nu) (-1)^{\frac{a-c\nu}{4c}} 2^{-\frac{2(a-c\nu)}{c} - \nu - 1} b^{\frac{a-c\nu}{c} + \nu} (x^{4c})^{\frac{a-c\nu}{4c} + \frac{\nu}{4}} \left(J_{-\nu} \left(b \sqrt[4]{x^{4c}} \right) + I_{-\nu} \left(b \sqrt[4]{x^{4c}} \right) \right) + c_2 \Gamma(2 - \nu) \right. \right.$$

✓ **Maple** : cpu = 0.098 (sec), leaf count = 57

$$\{y(x) = _C1 x^a J_\nu(x^c b) + _C2 x^a Y_\nu(x^c b) + _C3 x^a J_\nu(ibx^c) + _C4 x^a Y_\nu(ibx^c)\}$$

2.1571 ODE No. 1571

$$-\frac{1}{16} b^4 x^{2/v} y(x) + \nu^4 x^4 y^{(4)}(x) + \nu^3 (4\nu - 2) x^3 y^{(3)}(x) + (\nu - 1) \nu^2 (2\nu - 1) x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0907564 (sec), leaf count = 390

$$\left\{ \left\{ y(x) \rightarrow c_1 {}_0F_3 \left(; 1 - \frac{v}{2}, 1 - \frac{v}{2\nu}, -\frac{v}{2\nu} - \frac{v}{2} + 1; \frac{b^4 v^4 x^{2/v}}{256 \nu^4} \right) + c_2 \left(\frac{i}{16} \right)^v v^{2v} b^{2v} \nu^{-2v} (x^{2/v})^{v/2} {}_0F_3 \left(; \frac{v}{2} + 1, \frac{v}{2} + 1, \frac{v}{2} + 1; \frac{b^4 v^4 x^{2/v}}{256 \nu^4} \right) \right. \right.$$

✓ **Maple** : cpu = 0.207 (sec), leaf count = 151

$$\left\{ y(x) = _C1 \sqrt{x} J_{(\lfloor \nu^{-1} \rfloor)^{-1}} \left(\frac{1}{\lfloor \nu^{-1} \rfloor} \sqrt{\frac{b^2}{\nu^2}} x^{\frac{\lfloor \nu^{-1} \rfloor}{2}} \right) + _C2 \sqrt{x} Y_{(\lfloor \nu^{-1} \rfloor)^{-1}} \left(\frac{1}{\lfloor \nu^{-1} \rfloor} \sqrt{\frac{b^2}{\nu^2}} x^{\frac{\lfloor \nu^{-1} \rfloor}{2}} \right) + _C3 \sqrt{x} J_{(\lfloor \nu^{-1} \rfloor)^{-1}} \left(\frac{1}{\lfloor \nu^{-1} \rfloor} \sqrt{\frac{b^2}{\nu^2}} x^{\frac{\lfloor \nu^{-1} \rfloor}{2}} \right) \right.$$

2.1572 ODE No. 1572

$$(-2(x^2 - 1) (\mu(\mu + 1) + \nu(\nu + 1)) + 24x^3 - 8) y''(x) - 6x(\mu(\mu + 1) + \nu(\nu + 1) - 2) y'(x) + ((\mu(\mu + 1) - \nu(\nu + 1)) y(x) - 6x(\mu^2 + \mu + \nu^2 + \nu)) = 0$$

✗ **Mathematica** : cpu = 92.8632 (sec), leaf count = 0 , DifferentialRoot result

$$\{ \{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{(\mu - \nu - 1)(\mu - \nu + 1)(\mu + \nu)(\mu + \nu + 2)y(x) - 6x(\mu^2 + \mu + \nu^2 + \nu)\}) \}$$

✓ **Maple** : cpu = 0.421 (sec), leaf count = 37

$$\{y(x) = _C1 \text{LegendreP}(\nu, x) \text{LegendreP}(\mu, x) + _C2 \text{LegendreP}(\nu, x) \text{LegendreQ}(\mu, x) + _C3 \text{LegendreP}(\nu, x) \text{LegendreQ}(\mu, x) + _C4 \text{LegendreP}(\nu, x) \text{LegendreQ}(\mu, x)\}$$

2.1573 ODE No. 1573

$$-\frac{1}{x^5} + (2x + e^x)y^{(4)}(x) + 4(e^x + 2)y^{(3)}(x) + 6e^xy''(x) + 4e^xy'(x) + e^xy(x) = 0$$

✗ **Mathematica** : cpu = 0.0577987 (sec), leaf count = 0 , could not solve

DSolve[-x^(-5) + E^x*y[x] + 4*E^x*Derivative[1][y][x] + 6*E^x*Derivative[2][y][x] + 4*

✓ **Maple** : cpu = 0.045 (sec), leaf count = 65

$$\left\{ y(x) = \frac{-C4}{e^x + 2x} + \frac{-C1 x^3}{e^x + 2x} + \frac{x^2 - C2}{e^x + 2x} + \frac{-C3 x}{e^x + 2x} + \frac{1}{(24e^x + 48x)x} \right\}$$

2.1574 ODE No. 1574

$$y(x)(a^4 \sin^4(x) - 3) + y^{(4)}(x) \sin^4(x) + 2y^{(3)}(x) \sin^3(x) \cos(x) + (\sin^2(x) - 3) \sin^2(x) y''(x) + (2 \sin^2(x) + 3)$$

✗ **Mathematica** : cpu = 0.202362 (sec), leaf count = 0 , could not solve

DSolve[(-3 + a^4*Sin[x]^4)*y[x] + Cos[x]*Sin[x]*(3 + 2*Sin[x]^2)*Derivative[1][y][x] + 3 + Sin[x]^2)*Derivative[2][y][x] + 2*Cos[x]*Sin[x]^3*Derivative[3][y][x] + Sin[x]^4*

✓ **Maple** : cpu = 0.923 (sec), leaf count = 345

$$\left\{ y(x) = -C1 \sin(x) {}_2F_1\left(\frac{3}{4} - \frac{1}{4} \sqrt{-i(-4\sqrt{a+i}\sqrt{a-1}\sqrt{a-i}\sqrt{a+1} + 5i)}, \frac{3}{4} + \frac{1}{4} \sqrt{-i(-4\sqrt{a+i}\sqrt{a-1}\sqrt{a-i}\sqrt{a+1} + 5i)}\right) \right\}$$

2.1575 ODE No. 1575

$$-f(x) + y^{(4)}(x) \sin^6(x) + 4y^{(3)}(x) \sin^5(x) \cos(x) - 6 \sin^6(x) y''(x) - 4 \sin^5(x) \cos(x) y'(x) + y(x) \sin^6(x) = 0$$

✗ **Mathematica** : cpu = 0.0654131 (sec), leaf count = 0 , could not solve

DSolve[-f[x] + Sin[x]^6*y[x] - 4*Cos[x]*Sin[x]^5*Derivative[1][y][x] - 6*Sin[x]^6*Derivative[2][y][x] + 4*Sin[x]^5*Cos[x]*Derivative[3][y][x] + Sin[x]^6*y[x] = 0

✓ **Maple** : cpu = 0.399 (sec), leaf count = 1277

$$\left\{ y(x) = -\frac{f(12(\sin(x))^4 e^{2ix} \ln(\csc(x) - \cot(x)) x^3 - 12(\sin(x))^4 e^{2ix} \ln(1 - e^{ix}) x^3 + 12(\sin(x))^4 e^{2ix} \ln(1 + e^{ix}) x^3)}{12(\sin(x))^4 e^{2ix} \ln(1 - e^{ix}) x^3 + 12(\sin(x))^4 e^{2ix} \ln(1 + e^{ix}) x^3} \right\}$$

2.1576 ODE No. 1576

$$2f'(x) (y^{(3)}(x) - a^2y'(x)) + f(x) (a^4y(x) - 2a^2y''(x) + y^{(4)}(x)) = 0$$

✗ **Mathematica** : cpu = 0.236017 (sec), leaf count = 0 , could not solve

DSolve[2*Derivative[1][f][x]*(-(a^2*Derivative[1][y][x]) + Derivative[3][y][x]) + f[x]

✓ **Maple** : cpu = 0.027 (sec), leaf count = 67

$$\left\{ y(x) = _C1 e^{-ax} + _C2 e^{ax} + _C3 e^{\frac{x}{f}(-df + \sqrt{a^2f^2 + df^2})} + _C4 e^{-\frac{x}{f}(df + \sqrt{a^2f^2 + df^2})} \right\}$$

2.1577 ODE No. 1577

$$f''(x)y''(x) + 2y^{(3)}(x)f'(x) + f(x)y^{(4)}(x) = 0$$

✓ **Mathematica** : cpu = 1.10891 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow \int_1^x \left(\int_1^{K[2]} \left(\frac{c_1}{f(K[1])} + \frac{c_2 K[1]}{f(K[1])} \right) dK[1] \right) dK[2] + c_4 x + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.009 (sec), leaf count = 21

$$\left\{ y(x) = \frac{_C1 x^3}{6} + \frac{x^2 _C2}{2} + _C3 x + _C4 \right\}$$

2.1578 ODE No. 1578

$$a^4y(x) - \lambda(ax - b) (y''(x) - a^2y(x)) - 2a^2y''(x) + y^{(4)}(x) = 0$$

✗ **Mathematica** : cpu = 300.028 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 1.322 (sec), leaf count = 92

$$\left\{ y(x) = e^{ax} \left(\int e^{-2ax} \left(\int _C3 e^{ax} \text{Ai} \left(-\frac{\lambda(ax - b) + a^2}{a\lambda} \sqrt[3]{-a\lambda} \right) + _C4 e^{ax} \text{Bi} \left(-\frac{\lambda(ax - b) + a^2}{a\lambda} \sqrt[3]{-a\lambda} \right) \right) \right)$$

2.1579 ODE No. 1579

$$-ax - b \sin(x) - c \cos(x) + y^{(n)}(x) + 2y^{(3)}(x) + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.645438 (sec), leaf count = 104

$$\left\{ \left\{ y(x) \rightarrow \frac{ax^2}{2} + \frac{1}{8}b(x^2 - 2) \cos(x) - \frac{3}{8}bx \sin(x) - \frac{5}{16}b \cos(x) - \frac{1}{8}c(x^2 - 2) \sin(x) + c_2x \sin(x) + \frac{9}{16}c \sin(x) \right. \right.$$

✓ **Maple** : cpu = 0.304 (sec), leaf count = 78

$$\left\{ y(x) = -\frac{\cos(x) cx}{2} - \frac{\sin(x) cx^2}{8} + \frac{21 c \sin(x)}{32} - \frac{\sin(x) bx}{2} - \frac{3 b \cos(x)}{4} + \frac{\cos(x) bx^2}{8} + \frac{ax^2}{2} + _C1 \sin(x) \right.$$

2.1580 ODE No. 1580

$$y^{(6)}(x) + y(x) - \sin\left(\frac{x}{2}\right) \sin\left(\frac{3x}{2}\right) = 0$$

✓ **Mathematica** : cpu = 0.947422 (sec), leaf count = 234

$$\left\{ \left\{ y(x) \rightarrow c_4 e^{-\frac{\sqrt{3}x}{2}} \sin\left(\frac{x}{2}\right) + c_6 e^{\frac{\sqrt{3}x}{2}} \sin\left(\frac{x}{2}\right) + c_5 \sin(x) + c_1 e^{\frac{\sqrt{3}x}{2}} \cos\left(\frac{x}{2}\right) + c_3 e^{-\frac{\sqrt{3}x}{2}} \cos\left(\frac{x}{2}\right) + c_2 \cos(x) \right. \right.$$

✓ **Maple** : cpu = 0.709 (sec), leaf count = 164

$$\left\{ y(x) = \left(\frac{e^{\frac{i}{2}x}}{24} + \frac{e^{-\frac{i}{2}x}}{24} \right) \cos\left(\frac{x}{2}\right) + \left(\frac{e^{\frac{i}{2}x}}{56} + \frac{e^{-\frac{i}{2}x}}{56} \right) \cos\left(\frac{3x}{2}\right) + \left(\frac{i}{24} e^{\frac{i}{2}x} - \frac{i}{24} e^{-\frac{i}{2}x} \right) \sin\left(\frac{x}{2}\right) + \left(-\frac{11i}{168} e^{\frac{i}{2}x} + \frac{11i}{168} e^{-\frac{i}{2}x} \right) \sin\left(\frac{3x}{2}\right) \right.$$

2.1581 ODE No. 1581

$$-axy(x) - b + y^{(5)}(x) = 0$$

✗ **Mathematica** : cpu = 0.145665 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}(\{y, x\}, \{-b - xay(x) + y^{(5)}(x) = 0, y(0) = c_1, y'(0) = c_2, y''(0) = c_3, y^{(3)}(0) = c_4\}) \right. \right.$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

$$\text{dsolve}(\text{diff}(\text{diff}(\text{diff}(\text{diff}(\text{diff}(y(x), x), x), x), x), x) - a*x*y(x) - b = 0, y(x)))$$

2.1582 ODE No. 1582

$$a\nu x^{\nu-1}y(x) + ax^\nu y'(x) + y^{(5)}(x) = 0$$

✓ **Mathematica** : cpu = 0.471735 (sec), leaf count = 787

$$\left\{ \left\{ y(x) \rightarrow c_5 \left(\frac{4}{\nu} + 1 \right)^{-\frac{16}{\nu+4}} \nu^{-\frac{16}{\nu+4}} a^{\frac{4}{\nu+4}} (x^\nu)^{\frac{4(\frac{4}{\nu}+1)}{\nu+4}} {}_1F_4 \left(\frac{4}{\nu(1+\frac{4}{\nu})} + \frac{1}{1+\frac{4}{\nu}}; 1 + \frac{1}{(1+\frac{4}{\nu})\nu}, 1 + \frac{2}{(1+\frac{4}{\nu})\nu}, \dots \right) \right\} \right\}$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = DESol \left(\left\{ \frac{d^5}{dx^5} Y(x) + ax^\nu \frac{d}{dx} Y(x) + a\nu x^{\nu-1} Y(x) \right\}, \{ _Y(x) \} \right) \right\}$$

2.1583 ODE No. 1583

$$ay^{(n-1)}(x) - f(x) + y^{(n)}(x) = 0$$

✓ **Mathematica** : cpu = 95.2137 (sec), leaf count = 120

$$\left\{ \left\{ y(x) \rightarrow (\text{Integrate}[\$a\$133499 - 1])(\text{Integrate}[\$a\$133502 - 1]) \left(\frac{x^2}{2} - x \right) e^{-a \text{Integrate}[\$a\$180050]} (\text{Integrate}[\dots]) \right\} \right\}$$

✓ **Maple** : cpu = 0.03 (sec), leaf count = 40

$$\left\{ y(x) = \frac{e^{-ax} C1}{a^4} + \frac{fx^4}{24a} + \frac{x^3 C2}{6} + \frac{C3 x^2}{2} + C4 x + C5 \right\}$$

2.1584 ODE No. 1584

$$axy(x) - 5my^{(4)}(x) + xy^{(5)}(x) = 0$$

✓ **Mathematica** : cpu = 2.63473 (sec), leaf count = 216

$$\left\{ \left\{ y(x) \rightarrow c_5 5^{-5m-4} a^{\frac{1}{5}(5m+4)} x^{5m+4} {}_0F_4 \left(; m + \frac{6}{5}, m + \frac{7}{5}, m + \frac{8}{5}, m + \frac{9}{5}; -\frac{ax^5}{3125} \right) + \frac{1}{125} a^{3/5} c_4 x^3 {}_0F_4 \left(; \frac{6}{5}, \dots \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.25 (sec), leaf count = 118

$$\left\{ y(x) = C1 {}_0F_4 \left(; \frac{2}{5}, \frac{3}{5}, \frac{4}{5}, \frac{1}{5} - m; -\frac{x^5 a}{3125} \right) + C2 x {}_0F_4 \left(; \frac{3}{5}, \frac{4}{5}, \frac{6}{5}, \frac{2}{5} - m; -\frac{x^5 a}{3125} \right) + C3 x^2 {}_0F_4 \left(; \frac{4}{5}, \dots \right) \right\}$$

2.1585 ODE No. 1585

$$xy(x)(ay'(x) + by''(x) + cy^{(3)}(x) + ey^{(4)}(x)) = 0$$

✓ **Mathematica** : cpu = 0.211034 (sec), leaf count = 214

$$\left\{ \left\{ y(x) \rightarrow 0 \right\}, \left\{ y(x) \rightarrow \frac{c_1 e^{\text{Root}\left[\#1^3 + \frac{\#1^2 c}{e} + \frac{\#1 b}{e} + \frac{a}{e} \&, 1\right]}}{\text{Root}\left[\#1^3 + \frac{\#1^2 c}{e} + \frac{\#1 b}{e} + \frac{a}{e} \&, 1\right]} + \frac{c_2 e^{\text{Root}\left[\#1^3 + \frac{\#1^2 c}{e} + \frac{\#1 b}{e} + \frac{a}{e} \&, 2\right]}}{\text{Root}\left[\#1^3 + \frac{\#1^2 c}{e} + \frac{\#1 b}{e} + \frac{a}{e} \&, 2\right]} + \frac{c_3 e^{\text{Root}\left[\#1^3 + \frac{\#1^2 c}{e} + \frac{\#1 b}{e} + \frac{a}{e} \&, 3\right]}}{\text{Root}\left[\#1^3 + \frac{\#1^2 c}{e} + \frac{\#1 b}{e} + \frac{a}{e} \&, 3\right]} \right\} \right.$$

✓ **Maple** : cpu = 0.063 (sec), leaf count = 806

$$\left\{ y(x) = 0, y(x) = _C1 + _C2 e^{-\frac{x}{12e}} \left(i \left(12\sqrt{3}\sqrt{27a^2e^2 - 18abce + 4c^3a + 4b^3e - b^2c^2e} - 108ae^2 + 36bce - 8c^3 \right)^{\frac{2}{3}} \sqrt{3} + 12i\sqrt{3}be - 4i \right) \right.$$

2.1586 ODE No. 1586

$$-y^{(4)}(x)(x(aA(5) - A(4)) + A(5)) - y^{(3)}(x)(x(aA(4) - A(3)) + A(4)) - (x(aA(3) - A(2)) + A(3))y''(x) - (x(aA(2) - A(1)) + A(2))y'(x) - (xA(1) - xA(2) - A(2))y(x) + (xA(2) - A(2))y(x) = 0$$

✗ **Mathematica** : cpu = 83.8224 (sec), leaf count = 0 , DifferentialRoot result

$$\left\{ \left\{ y(x) \rightarrow \text{DifferentialRoot}\left(\{y, x\}, \{xA(0) - xA(1) - A(1) + (xA(1) - xA(2) - A(2))y'(x) + (xA(2) - A(2))y(x)\}\right) \right\} \right.$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \int \text{DESol} \left(\left\{ -\frac{(axA_2 - xA_1 + A_2)Y(x)}{x} - \frac{(axA_3 - xA_2 + A_3)\frac{d}{dx}Y(x)}{x} - \frac{(axA_4 - xA_3 + A_4)Y(x)}{x} \right\} \right) dx \right.$$

2.1587 ODE No. 1587

$$x^5y^{(10)}(x) - ay(x) = 0$$

✓ **Mathematica** : cpu = 0.313479 (sec), leaf count = 492

$$\left\{ \left\{ y(x) \rightarrow \frac{(-1)^{4/5} a^{9/5} c_1 x^9 {}_0F_9\left(\left(\frac{6}{5}, \frac{7}{5}, \frac{8}{5}, \frac{9}{5}, 2, \frac{11}{5}, \frac{12}{5}, \frac{13}{5}, \frac{14}{5}, \frac{ax^5}{9765625}\right)\right)}{3814697265625} + \frac{(-1)^{3/5} a^{8/5} c_3 x^8 {}_0F_9\left(\left(\frac{4}{5}, \frac{6}{5}, \frac{7}{5}, \frac{8}{5}, \frac{9}{5}, 2, \frac{11}{5}, \frac{12}{5}, \frac{13}{5}, \frac{14}{5}, \frac{ax^5}{9765625}\right)\right)}{152587890625} \right\} \right.$$

✓ **Maple** : cpu = 0.526 (sec), leaf count = 200

$$\left\{ y(x) = {}_0C1 x^{\frac{5}{2}} I_5(2 a^{1/10} \sqrt{x}) + {}_0C2 x^{\frac{5}{2}} Y_5(2 i a^{\frac{1}{10}} \sqrt{x}) + {}_0C3 x^{\frac{5}{2}} I_5(2 e^{i/5\pi} a^{1/10} \sqrt{x}) + {}_0C4 x^{\frac{5}{2}} I_5(2 e^{2/5 i} a^{1/10} \sqrt{x}) \right\}$$

2.1588 ODE No. 1588

$$x^{10} y^{(5)}(x) - ay(x) = 0$$

✓ **Mathematica** : cpu = 5.67911 (sec), leaf count = 114

$$\left\{ \left\{ y(x) \rightarrow c_1 x^4 e^{-\frac{\sqrt[5]{a}}{x}} + c_2 x^4 e^{\frac{\sqrt[5]{-1} \sqrt[5]{a}}{x}} + c_3 x^4 e^{-\frac{(-1)^{2/5} \sqrt[5]{a}}{x}} + c_4 x^4 e^{\frac{(-1)^{3/5} \sqrt[5]{a}}{x}} + c_5 x^4 e^{-\frac{(-1)^{4/5} \sqrt[5]{a}}{x}} \right\} \right\}$$

✓ **Maple** : cpu = 0.139 (sec), leaf count = 90

$$\left\{ y(x) = {}_0C1 {}_0F_4\left(\left(\frac{6}{5}, \frac{7}{5}, \frac{8}{5}, \frac{9}{5}\right); -\frac{a}{3125 x^5}\right) + {}_0C2 x {}_0F_4\left(\left(\frac{4}{5}, \frac{6}{5}, \frac{7}{5}, \frac{8}{5}\right); -\frac{a}{3125 x^5}\right) + {}_0C3 x^2 {}_0F_4\left(\left(\frac{3}{5}, \frac{4}{5}, \frac{6}{5}, \frac{7}{5}\right); -\frac{a}{3125 x^5}\right) \right\}$$

2.1589 ODE No. 1589

$$x^{11/2} y^{(11)}(x) - ay(x) = 0$$

✓ **Mathematica** : cpu = 0.0488689 (sec), leaf count = 670

$$\left\{ \left\{ y(x) \rightarrow \frac{4}{121} (-1)^{2/11} a^{2/11} c_2 x {}_0F_{10}\left(\left(-\frac{7}{11}, -\frac{5}{11}, -\frac{3}{11}, -\frac{1}{11}, \frac{1}{11}, \frac{3}{11}, \frac{5}{11}, \frac{7}{11}, \frac{9}{11}, \frac{13}{11}\right); \frac{2048 a x^{11/2}}{285311670611}\right) \right\} \right\}$$

✓ **Maple** : cpu = 8.655 (sec), leaf count = 27500

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2.1590 ODE No. 1590

$$(x - a)^5(x - b)^5y^{(5)}(x) - cy(x) = 0$$

✗ **Mathematica** : cpu = 299.998 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 3.219 (sec), leaf count = 1258

$$\left\{ y(x) = ODESolStruc \left(e^{\frac{(e^{(f-g(-f)d_f+_{-}C1)a-(f-g(-f)d_f+_{-}C1)b)^2_{-}f+4(e^{(f-g(-f)d_f+_{-}C1)a-(f-g(-f)d_f+_{-}C1)b})^2_{b-2}e^{(f-g(-f)d_f+_{-}C1)a-(f-g(-f)d_f+_{-}C1)b}}{e^{(f-g(-f)d_f+_{-}C1)a-(f-g(-f)d_f+_{-}C1)b}}}$$

2.1591 ODE No. 1591

$$y''(x) - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0649641 (sec), leaf count = 26

$$\left\{ \left\{ y(x) \rightarrow \sqrt[3]{6}\wp \left(\frac{x + c_1}{\sqrt[3]{6}}; 0, c_2 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.036 (sec), leaf count = 12

$$\{y(x) = 6 \textit{WeierstrassP}(x + _C1, 0, _C2)\}$$

2.1592 ODE No. 1592

$$y''(x) - 6y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0367252 (sec), leaf count = 14

$$\left\{ \left\{ y(x) \rightarrow \wp(x + c_1; 0, c_2) \right\} \right\}$$

✓ **Maple** : cpu = 0.013 (sec), leaf count = 10

$$\{y(x) = \textit{WeierstrassP}(x + _C1, 0, _C2)\}$$

2.1593 ODE No. 1593

$$y''(x) - 6y(x)^2 - x = 0$$

✗ **Mathematica** : cpu = 0.160176 (sec), leaf count = 0 , could not solve

`DSolve[-x - 6*y[x]^2 + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x),x),x)-6*y(x)^2-x=0,y(x))`

2.1594 ODE No. 1594

$$y''(x) - 6y(x)^2 + 4y(x) = 0$$

✓ **Mathematica** : cpu = 0.366401 (sec), leaf count = 373

Solve
$$\frac{4(\text{Root}[4\#1^3 - 4\#1^2 + c_1\&, 2] - \text{Root}[4\#1^3 - 4\#1^2 + c_1\&, 3]) (y(x) - \text{Root}[4\#1^3 - 4\#1^2 + c_1\&, 2])}{(c_1 + 4y(x)^3 - 4y(x)^2) (\text{Root}[4\#1^3 - 4\#1^2 + c_1\&, 2])}$$

✓ **Maple** : cpu = 0.213 (sec), leaf count = 59

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{4a^3 - 4a^2 + C1}} da - x - C2 = 0, \int^{y(x)} -\frac{1}{\sqrt{4a^3 - 4a^2 + C1}} da - x - C2 = 0 \right.$$

2.1595 ODE No. 1595

$$ay(x)^2 + bx + c + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.330598 (sec), leaf count = 0 , could not solve

`DSolve[c + b*x + a*y[x]^2 + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x),x),x)+a*y(x)^2+b*x+c=0,y(x))`

2.1596 ODE No. 1596

$$a + y''(x) - 2y(x)^3 - xy(x) = 0$$

✗ **Mathematica** : cpu = 1.099 (sec), leaf count = 0 , could not solve

`DSolve[a - x*y[x] - 2*y[x]^3 + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x),x),x)-2*y(x)^3-x*y(x)+a=0,y(x))`

2.1597 ODE No. 1597

$$y''(x) - ay(x)^3 = 0$$

✓ **Mathematica** : cpu = 2.20463 (sec), leaf count = 242

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt[4]{2}\sqrt{c_1}\sqrt{\frac{i\sqrt{a}}{\sqrt{c_1}}}\operatorname{sn}\left(\frac{(-1)^{3/4}\sqrt{\sqrt{2}\sqrt{a}\sqrt{c_1}x^2+2\sqrt{2}\sqrt{a}\sqrt{c_1}c_2x+\sqrt{2}\sqrt{a}\sqrt{c_1}c_2^2}}{\sqrt{2}}\right)-1}{\sqrt{a}} \right\} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt[4]{2}\sqrt{c_1}\sqrt{\frac{i\sqrt{a}}{\sqrt{c_1}}}}{\sqrt{a}} \right\}$$

✓ **Maple** : cpu = 0.027 (sec), leaf count = 21

$$\left\{ y(x) = _C2 \operatorname{JacobiSN}\left(\left(\frac{x}{2}\sqrt{-2a} + _C1\right) _C2, i\right) \right\}$$

2.1598 ODE No. 1598

$$-2a^2y(x)^3 + 2abxy(x) - b + y''(x) = 0$$

✗ **Mathematica** : cpu = 3.53294 (sec), leaf count = 0 , could not solve

`DSolve[-b + 2*a*b*x*y[x] - 2*a^2*y[x]^3 + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x),x),x)-2*a^2*y(x)^3+2*a*b*x*y(x)-b=0,y(x))`

2.1602 ODE No. 1602

$$(n + 1)a^{2n}y(x)^{2n+1} + y''(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 86.5668 (sec), leaf count = 46

$$\text{Solve} \left[\left(\int_1^{y(x)} \frac{1}{\sqrt{c_1 - K[1]^2 (a^{2n} K[1]^{2n} - 1)}} dK[1] \right)^2 = (c_2 + x)^2, y(x) \right]$$

✓ **Maple** : cpu = 0.28 (sec), leaf count = 73

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{-a^{2n+2}a^{2n} + a^2 + C1}} d_{-a-x} - C2 = 0, \int^{y(x)} -\frac{1}{\sqrt{-a^{2n+2}a^{2n} + a^2 + C1}} d_{-a-x} \right.$$

2.1603 ODE No. 1603

$$y''(x) - \frac{1}{(ay(x)^2 + bxy(x) + cx^2 + dy(x) + ex + k)^{3/2}} = 0$$

✗ **Mathematica** : cpu = 60.6312 (sec), leaf count = 0 , could not solve

DSolve[-(k + e*x + c*x^2 + d*y[x] + b*x*y[x] + a*y[x]^2)^(-3/2) + Derivative[2][y][x]

✓ **Maple** : cpu = 72.533 (sec), leaf count = 13291

$$\alpha b^3 c - 64 \int \frac{1}{64} \left\{ \frac{y(x)}{a^4 c^2} = \frac{1}{32} \left(\frac{2 \operatorname{ReptOf} \left(\frac{1}{g^2 a^3 b^2 c} + 4 \frac{4 \arctan \left(\frac{1/2}{g^2 a^2 b^4 + 16 a^2 c^2 \sqrt{a^8 a b^2 c^2 + b^4 a c^2 + 16 a^3 c^2 c + 16 a^3 b^2 e + b^2 g^2}} \right)}{ca + \arctan \left(\frac{1/2}{g^2 a^2 b^4 + 16 a^2 c^2 \sqrt{a^8 a b^2 c^2 + b^4 a c^2 + 16 a^3 c^2 c + 16 a^3 b^2 e + b^2 g^2}} \right)} \right)}{g^2 a^4 c^2} \right)$$

2.1604 ODE No. 1604

$$y''(x) - e^{y(x)} = 0$$

✓ **Mathematica** : cpu = 0.0853356 (sec), leaf count = 34

$$\left\{ \left\{ y(x) \rightarrow \log \left(\frac{1}{2} c_1 \left(\tanh^2 \left(\frac{1}{2} \sqrt{c_1 (c_2 + x)^2} \right) - 1 \right) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.42 (sec), leaf count = 23

$$\left\{ y(x) = \ln \left(\frac{1}{2 C1^2} \left(\left(\tan \left(\frac{C2 + x}{2 C1} \right) \right)^2 + 1 \right) \right) \right\}$$

2.1605 ODE No. 1605

$$ae^x \sqrt{y(x)} + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.499258 (sec), leaf count = 0 , could not solve

`DSolve[a*E^x*Sqrt[y[x]] + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 1.417 (sec), leaf count = 109

$$\left\{ y(x) = ODESolStruc \left(\frac{-a}{e^{-2} \int -b(-a) d_a - 2_{C1}}, \left[\left\{ \frac{d}{d_a} - b(-a) = (\sqrt{-aa} + 4_a) (-b(-a))^3 + 4(-b(-a)) \right\} \right] \right) \right.$$

2.1606 ODE No. 1606

$$y''(x) + e^x \sin(y(x)) = 0$$

✗ **Mathematica** : cpu = 1.08257 (sec), leaf count = 0 , could not solve

`DSolve[E^x*Sin[y[x]] + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x),x),x)+exp(x)*sin(y(x))=0,y(x))`

2.1607 ODE No. 1607

$$a \sin(y(x)) + y''(x) = 0$$

✓ **Mathematica** : cpu = 0.179407 (sec), leaf count = 79

$$\left\{ \left\{ y(x) \rightarrow -2am \left(\frac{1}{2} \sqrt{(2a + c_1)(x + c_2)^2} \middle| \frac{4a}{2a + c_1} \right) \right\}, \left\{ y(x) \rightarrow 2am \left(\frac{1}{2} \sqrt{(2a + c_1)(x + c_2)^2} \middle| \frac{4a}{2a + c_1} \right) \right\} \right.$$

✓ **Maple** : cpu = 0.121 (sec), leaf count = 49

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{2a \cos(-a) + C1}} d_a - x - C2 = 0, \int^{y(x)} -\frac{1}{\sqrt{2a \cos(-a) + C1}} d_a - x - C2 = 0 \right\}$$

2.1608 ODE No. 1608

$$a^2 \sin(y(x)) - b \sin(x) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.0513277 (sec), leaf count = 0 , could not solve

`DSolve[-(b*Sin[x]) + a^2*Sin[y[x]] + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x),x),x)+a^2*sin(y(x))-b*sin(x)=0,y(x))`

2.1609 ODE No. 1609

$$a^2 \sin(y(x)) - bf(x) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.0340092 (sec), leaf count = 0 , could not solve

`DSolve[-(b*f[x]) + a^2*Sin[y[x]] + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x),x),x)+a^2*sin(y(x))-b*f(x)=0,y(x))`

2.1610 ODE No. 1610

$$y''(x) - \frac{h\left(\frac{y(x)}{\sqrt{x}}\right)}{x^{3/2}} = 0$$

✗ **Mathematica** : cpu = 300.102 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.293 (sec), leaf count = 92

$$\left\{ y(x) = \text{RootOf} \left(-\ln(x) - 2 \int^{-Z} \frac{1}{\sqrt{-C1 + 8 \int h(_g) d_g + _g^2}} d_g + 2_C2 \right) \sqrt{x}, y(x) = \text{RootOf} \right.$$

2.1611 ODE No. 1611

$$y''(x) - 3y'(x) - y(x)^2 - 2y(x) = 0$$

✗ **Mathematica** : cpu = 5.01592 (sec), leaf count = 0 , could not solve

`DSolve[-2*y[x] - y[x]^2 - 3*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.573 (sec), leaf count = 57

$$\left\{ y(x) = ODESolStruc\left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) - 3 b(-a) - a^2 - 2 a = 0 \right], \left\{ -a = y(x), \dots \right. \right.$$

2.1612 ODE No. 1612

$$y''(x) - 7y'(x) - y(x)^{3/2} + 12y(x) = 0$$

✗ **Mathematica** : cpu = 22.1065 (sec), leaf count = 0 , could not solve

`DSolve[12*y[x] - y[x]^(3/2) - 7*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 1.343 (sec), leaf count = 57

$$\left\{ y(x) = ODESolStruc\left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) - 7 b(-a) - a^{\frac{3}{2}} + 12 a = 0 \right], \left\{ -a = y(x), \dots \right. \right.$$

2.1613 ODE No. 1613

$$6a^2y(x) + 5ay'(x) + y''(x) - 6y(x)^2 = 0$$

✗ **Mathematica** : cpu = 1.97108 (sec), leaf count = 0 , could not solve

`DSolve[6*a^2*y[x] - 6*y[x]^2 + 5*a*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.022 (sec), leaf count = 27

$$\left\{ y(x) = WeierstrassP\left(-\frac{e^{-ax}}{a} + C1, 0, C2\right) (e^{-ax})^2 \right\}$$

2.1614 ODE No. 1614

$$2a^2y(x) + 3ay'(x) + y''(x) - 2y(x)^3 = 0$$

✗ **Mathematica** : cpu = 1.36862 (sec), leaf count = 0 , could not solve

DSolve[2*a^2*y[x] - 2*y[x]^3 + 3*a*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.066 (sec), leaf count = 33

$$\left\{ y(x) = \frac{-C2}{e^{ax}} \text{JacobiSN} \left(\left(-\frac{1}{a} \sqrt{-e^{-2ax}} + -C1 \right) - C2, i \right) \right\}$$

2.1615 ODE No. 1615

$$-\frac{2(n+1)(n+2)y(x) \left(y(x)^{\frac{n}{n+1}} - 1 \right)}{n^2} - \frac{(3n+4)y'(x)}{n} + y''(x) = 0$$

✗ **Mathematica** : cpu = 112.949 (sec), leaf count = 0 , could not solve

DSolve[(-2*(1+n)*(2+n)*y[x]*(-1+y[x]^(n/(1+n))))/n^2 - ((4+3*n)*Derivative[1][y][x] + Derivative[2][y][x]) == 0, y[x], x]

✓ **Maple** : cpu = 4.551 (sec), leaf count = 116

$$\left\{ y(x) = \text{ODESolStruc} \left(-a, \left[\left\{ \left(\frac{d}{d-a} b(-a) \right) - b(-a) - \frac{1}{n^2} \left(2 - a^{\frac{n}{n+1}} - a n^2 + 6 - a^{\frac{n}{n+1}} - a n + 3 - b(-a) \right) \right\} \right] \right) \right\}$$

2.1616 ODE No. 1616

$$\frac{1}{4}(a^2 - 1)y(x) + ay'(x) + by(x)^n + y''(x) = 0$$

✗ **Mathematica** : cpu = 24.6656 (sec), leaf count = 0 , could not solve

DSolve[((-1+a^2)*y[x])/4 + b*y[x]^n + a*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 1.353 (sec), leaf count = 63

$$\left\{ y(x) = \text{ODESolStruc} \left(-a, \left[\left\{ \left(\frac{d}{d-a} b(-a) \right) - b(-a) + a b(-a) + b a^n + \frac{a a^2}{4} - \frac{a}{4} = 0 \right\}, \left\{ -a = \right\} \right] \right) \right\}$$

2.1617 ODE No. 1617

$$ay'(x) + bx^r y(x)^n + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.0451625 (sec), leaf count = 0 , could not solve

DSolve[b*x^r*y[x]^n + a*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(diff(diff(y(x),x),x)+a*diff(y(x),x)+b*x^r*y(x)^n=0,y(x))

2.1618 ODE No. 1618

$$ay'(x) - 2a + be^{y(x)} + y''(x) = 0$$

✗ **Mathematica** : cpu = 30.367 (sec), leaf count = 0 , could not solve

DSolve[-2*a + b*E^y[x] + a*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 1.706 (sec), leaf count = 56

$$\left\{ y(x) = ODESolStruc\left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) + a_b(-a) + be^{-a} - 2a = 0 \right], \left\{ -a = y(x), -b \right. \right. \right.$$

2.1619 ODE No. 1619

$$ay'(x) + f(x) \sin(y(x)) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.0557902 (sec), leaf count = 0 , could not solve

DSolve[f[x]*Sin[y[x]] + a*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(diff(diff(y(x),x),x)+a*diff(y(x),x)+f(x)*sin(y(x))=0,y(x))

2.1620 ODE No. 1620

$$y''(x) + y(x)y'(x) - y(x)^3 = 0$$

✗ **Mathematica** : cpu = 122.262 (sec), leaf count = 0 , could not solve

DSolve[-y[x]^3 + y[x]*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.127 (sec), leaf count = 253

$$\left\{ \int^{y(x)} \left(\frac{a^2}{2} + \frac{1}{2} \left(\sqrt[3]{-C1 + \sqrt{-a^6 + -C1^2}} - a^2 \frac{1}{\sqrt[3]{-C1 + \sqrt{-a^6 + -C1^2}}} \right)^2 \right)^{-1} d_a - x - C2 = \right.$$

2.1621 ODE No. 1621

$$ay(x) + y''(x) + y(x)y'(x) - y(x)^3 = 0$$

✗ **Mathematica** : cpu = 100.126 (sec), leaf count = 0 , could not solve

`DSolve[a*y[x] - y[x]^3 + y[x]*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 1.231 (sec), leaf count = 8191

2.1622 ODE No. 1622

$$2a^2y(x) + (3a + y(x))y'(x) + ay(x)^2 + y''(x) - y(x)^3 = 0$$

✗ **Mathematica** : cpu = 26.3566 (sec), leaf count = 0 , could not solve

`DSolve[2*a^2*y[x] + a*y[x]^2 - y[x]^3 + (3*a + y[x])*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.352 (sec), leaf count = 775

$$\left\{ y(x) = \frac{1}{e^{ax}} \text{RootOf} \left(\int^{-Z} \frac{1}{-f^6 + C1} \left(-f^8 - C1 f^2 + \left(-f^{12} + 2 C1 f^6 - C1^2 + \sqrt{\frac{C1^3}{-f^6}} \right) \right) \right) \right.$$

2.1623 ODE No. 1623

$$y(x) (f'(x) + 2f(x)^2) + (3f(x) + y(x))y'(x) + f(x)y(x)^2 + y''(x) - y(x)^3 = 0$$

✗ **Mathematica** : cpu = 0.449546 (sec), leaf count = 0 , could not solve

`DSolve[f[x]*y[x]^2 - y[x]^3 + y[x]*(2*f[x]^2 + Derivative[1][f][x]) + (3*f[x] + y[x])*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x), x), x) + (y(x) + 3*f(x))*diff(y(x), x) - y(x)^3 + f(x)*y(x)^2 + y(x)*(diff(f(x), x))) = 0, y(x))`

2.1624 ODE No. 1624

$$y(x) \left(af(x)^2 - \frac{f''(x)}{f(x)} + 3f'(x) + \frac{3f'(x)^2}{f(x)^2} \right) + bf(x)^3 - \left(\frac{f'(x)}{f(x)} + f(x) \right) (3y'(x) + y(x)^2) + y''(x) + y(x)y'(x)$$

✗ **Mathematica** : cpu = 1.51473 (sec), leaf count = 0 , could not solve

DSolve[b*f[x]^3 - y[x]^3 + y[x]*Derivative[1][y][x] - (f[x] + Derivative[1][f][x]/f[x])

✓ **Maple** : cpu = 2.01 (sec), leaf count = 135

$$\left\{ y(x) = ODESolStruc \left(f \left(\text{RootOf} \left(\int -b(_a) d_a + _C1 - \int^{-Z} f(_f) d_f \right) \right) _a, \left[\left\{ \frac{d}{d_a} - b(_a) = \right. \right. \right. \right.$$

2.1625 ODE No. 1625

$$y'(x) \left(y(x) - \frac{3f'(x)}{2f(x)} \right) - \frac{y(x)^2 f'(x)}{2f(x)} + y(x) \left(-\frac{f''(x)}{2f(x)} + \frac{f'(x)^2}{f(x)^2} + f(x) \right) + y''(x) - y(x)^3 = 0$$

✗ **Mathematica** : cpu = 0.972192 (sec), leaf count = 0 , could not solve

DSolve[-y[x]^3 - (y[x]^2*Derivative[1][f][x])/(2*f[x]) + (y[x] - (3*Derivative[1][f][x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(diff(diff(y(x),x),x)+(y(x)-3/2*diff(f(x),x)/f(x))*diff(y(x),x)-y(x)^3-
1/2*diff(f(x),x)/f(x)*y(x)^2+1/2*(f(x)+diff(f(x),x)^2/f(x)^2-diff(diff(f(x),x),x))/f(x)

2.1626 ODE No. 1626

$$y(x)f'(x) + f(x)y'(x) + y''(x) + 2y(x)y'(x) = 0$$

✗ **Mathematica** : cpu = 39.3803 (sec), leaf count = 0 , could not solve

DSolve[y[x]*Derivative[1][f][x] + f[x]*Derivative[1][y][x] + 2*y[x]*Derivative[1][y][x]

✓ **Maple** : cpu = 0.227 (sec), leaf count = 48

$$\left\{ y(x) = ODESolStruc \left(-b(_a), \left[\left\{ \frac{d}{d_a} - b(_a) = -(_b(_a))^2 - f(_a) _b(_a) - _C1 \right\}, \{ _a = x, _ \right. \right. \right.$$

2.1627 ODE No. 1627

$$f(x) (y'(x) + y(x)^2) - g(x) + y''(x) + 2y(x)y'(x) = 0$$

✗ **Mathematica** : cpu = 0.297348 (sec), leaf count = 0 , could not solve

DSolve[-g[x] + 2*y[x]*Derivative[1][y][x] + f[x]*(y[x]^2 + Derivative[1][y][x]) + Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.954 (sec), leaf count = 63

$$\left\{ y(x) = ODESolStruc\left(-b(-a), \left[\left((-b(-a))^2 e^{\int f(-a) d-a} + e^{\int f(-a) d-a} \frac{d}{d-a} (-b(-a)) - \int e^{\int f(-a) d-a} g(-a) \right) \right] \right) \right\}$$

2.1628 ODE No. 1628

$$f(x)y(x) - g(x) + y''(x) + 3y(x)y'(x) + y(x)^3 = 0$$

✗ **Mathematica** : cpu = 5.5238 (sec), leaf count = 0 , could not solve

DSolve[-g[x] + f[x]*y[x] + y[x]^3 + 3*y[x]*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ y(x) = \frac{\frac{d}{dx} DESol\left(\left\{-g(x) - Y(x) + f(x) \frac{d}{dx} Y(x) + \frac{d^3}{dx^3} Y(x)\right\}, \{-Y(x)\}\right)}{DESol\left(\left\{-g(x) - Y(x) + f(x) \frac{d}{dx} Y(x) + \frac{d^3}{dx^3} Y(x)\right\}, \{-Y(x)\}\right)} \right\}$$

2.1629 ODE No. 1629

$$(f(x) + 3y(x))y'(x) + f(x)y(x)^2 + y''(x) + y(x)^3 = 0$$

✗ **Mathematica** : cpu = 0.0375623 (sec), leaf count = 0 , could not solve

DSolve[f[x]*y[x]^2 + y[x]^3 + (f[x] + 3*y[x])*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.037 (sec), leaf count = 38

$$\left\{ y(x) = \frac{\int -C1 e^{-\int f(x) dx} dx + -C2}{\iint -C1 e^{-\int f(x) dx} dx dx + -C2 x + 1} \right\}$$

2.1630 ODE No. 1630

$$-4a^2y(x) - 3ay(x)^2 - b + y''(x) - 3y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 11.6592 (sec), leaf count = 3227

$$\left\{ \left\{ y(x) \rightarrow - \frac{2 \left((-1)^{\frac{a^{3/2} \sqrt{4a^3 - 3b - 2a^3}}{4a^3} + 1 \right) 2^{-\frac{3(a^{3/2} \sqrt{4a^3 - 3b - 2a^3})}{4a^3} + \frac{3\sqrt{4a^6 - 3a^3b}}{4a^3} + 1}{3^{\frac{a^{3/2} \sqrt{4a^3 - 3b - 2a^3}}{4a^3} - \frac{\sqrt{4a^6 - 3a^3b}}{4a^3}} a^{-\frac{a^{3/2} \sqrt{4a^3 - 3b - 2a^3}}{2a^3}} \right. \right. \right.$$

✓ **Maple** : cpu = 0.643 (sec), leaf count = 803

$$\left\{ \int^{y(x)} -6a^2 \left(-12_a a^3 - 9_a^2 a^2 + \left(\text{RootOf} \left(2 K_{1/2} \frac{4a^3 - 3b}{\sqrt{(4a^3 - 3b)aa}} \left(-1/2 \frac{Z}{a^2} \right) - C1 a^2 + 3 K_{1/2} \frac{4a^3 - 3b}{\sqrt{(4a^3 - 3b)aa}} \right) \right. \right.$$

2.1631 ODE No. 1631

$$-(f(x) + 3y(x))y'(x) + f(x)y(x)^2 + y''(x) + y(x)^3 = 0$$

✗ **Mathematica** : cpu = 0.0313572 (sec), leaf count = 0 , could not solve

`DSolve[f[x]*y[x]^2 + y[x]^3 - (f[x] + 3*y[x])*Derivative[1][y][x] + Derivative[2][y][x]`

✓ **Maple** : cpu = 0.049 (sec), leaf count = 38

$$\left\{ y(x) = \frac{- \int -C1 e^{\int f(x) dx} dx - C2}{\iint -C1 e^{\int f(x) dx} dx dx + -C2 x + 1} \right\}$$

2.1632 ODE No. 1632

$$y''(x) - 2ay(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0636685 (sec), leaf count = 46

$$\left\{ \left\{ y(x) \rightarrow \frac{\sqrt{c_1} \tan(\sqrt{a}\sqrt{c_1}x + \sqrt{a}\sqrt{c_1}c_2)}{\sqrt{a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.098 (sec), leaf count = 29

$$\left\{ y(x) = \frac{1}{a} \tan \left(-C2 \sqrt{-C1 a} + x \sqrt{-C1 a} \right) \sqrt{-C1 a} \right\}$$

2.1633 ODE No. 1633

$$ay(x)y'(x) + by(x)^3 + y''(x) = 0$$

✗ **Mathematica** : cpu = 39.1883 (sec), leaf count = 0 , could not solve

`DSolve[b*y[x]^3 + a*y[x]*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.283 (sec), leaf count = 97

$$\left\{ \int^{y(x)} \left(\text{RootOf} \left(-2 a - a^2 \text{Arctanh} \left(\frac{-a^2 a + 4 Z}{\sqrt{-a^4 (a^2 - 8 b)}} \right) + -C1 \sqrt{-a^4 (a^2 - 8 b)} - \ln (-a^4 b + Z - a^2 a + \dots \right. \right. \right.$$

2.1634 ODE No. 1634

$$y'(x)h(x, y(x)) + j(x, y(x)) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.155056 (sec), leaf count = 0 , could not solve

`DSolve[j[x, y[x]] + h[x, y[x]]*Derivative[1][y][x] + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x), x), x) + h(x, y(x))*diff(y(x), x) + j(x, y(x)) = 0, y(x))`

2.1635 ODE No. 1635

$$ay'(x)^2 + by(x) + y''(x) = 0$$

✗ **Mathematica** : cpu = 101.492 (sec), leaf count = 0 , could not solve

`DSolve[b*y[x] + a*Derivative[1][y][x]^2 + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.177 (sec), leaf count = 79

$$\left\{ \int^{y(x)} -2 \frac{a}{\sqrt{4 e^{-2 a - a} - C1 a^2 - 4 a a b + 2 b}} d_a - x - C2 = 0, \int^{y(x)} 2 \frac{a}{\sqrt{4 e^{-2 a - a} - C1 a^2 - 4 a a b + \dots}} \right.$$

2.1636 ODE No. 1636

$$ay'(x)|y'(x)| + by'(x) + cy(x) + y''(x) = 0$$

✗ **Mathematica** : cpu = 36.6546 (sec), leaf count = 0 , could not solve

`DSolve[c*y[x] + b*Derivative[1][y][x] + a*Abs[Derivative[1][y][x]]*Derivative[1][y][x]`

✓ **Maple** : cpu = 0.896 (sec), leaf count = 59

$$\left\{ y(x) = ODESolStruc\left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) + a_b(-a) | -b(-a)| + -b(-a) b + c_a = 0 \right] \right\}, \left\{ \right.$$

2.1637 ODE No. 1637

$$ay'(x)^2 + by'(x) + cy(x) + y''(x) = 0$$

✗ **Mathematica** : cpu = 29.8883 (sec), leaf count = 0 , could not solve

`DSolve[c*y[x] + b*Derivative[1][y][x] + a*Derivative[1][y][x]^2 + Derivative[2][y][x]`

✓ **Maple** : cpu = 0.555 (sec), leaf count = 58

$$\left\{ y(x) = ODESolStruc\left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) + a(-b(-a))^2 + -b(-a) b + c_a = 0 \right] \right\}, \left\{ -a = \right.$$

2.1638 ODE No. 1638

$$ay'(x)^2 + b \sin(y(x)) + y''(x) = 0$$

✗ **Mathematica** : cpu = 100.099 (sec), leaf count = 0 , could not solve

`DSolve[b*Sin[y[x]] + a*Derivative[1][y][x]^2 + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.189 (sec), leaf count = 126

$$\left\{ \int^{y(x)} (4a^2 + 1) \frac{1}{\sqrt{(4a^2 + 1)(4e^{-2a_a} C1 a^2 - 4 \sin(-a) ab + 2 \cos(-a) b + e^{-2a_a} C1)}} d_a - x - \right.$$

2.1639 ODE No. 1639

$$ay'(x)|y'(x)| + b\sin(y(x)) + y''(x) = 0$$

✗ **Mathematica** : cpu = 41.0323 (sec), leaf count = 0 , could not solve

`DSolve[b*Sin[y[x]] + a*Abs[Derivative[1][y][x]]*Derivative[1][y][x] + Derivative[2][y][x]]`

✓ **Maple** : cpu = 3.543 (sec), leaf count = 56

$$\left\{ y(x) = ODESolStruc\left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) -b(-a) + a_b(-a) | -b(-a)| + b\sin(-a) = 0 \right], \left\{ -a = \right. \right. \right.$$

2.1640 ODE No. 1640

$$ay(x)y'(x)^2 + by(x) + y''(x) = 0$$

✗ **Mathematica** : cpu = 200.203 (sec), leaf count = 0 , could not solve

`DSolve[b*y[x] + a*y[x]*Derivative[1][y][x]^2 + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.188 (sec), leaf count = 70

$$\left\{ \int^{y(x)} a \frac{1}{\sqrt{a(e^{-a^2a} C1 a - b)}} d_a - x - C2 = 0, \int^{y(x)} -a \frac{1}{\sqrt{a(e^{-a^2a} C1 a - b)}} d_a - x - C2 = 0 \right.$$

2.1641 ODE No. 1641

$$g(x)y'(x) + h(y(x))y'(x)^2 + y''(x) = 0$$

✓ **Mathematica** : cpu = 2.00892 (sec), leaf count = 57

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\int_1^{\#1} e^{-\int_1^{K[4]} -h(K[1]) dK[1]} dK[4] \& \right] \left[\int_1^x c_1 \left(-e^{-\int_1^{K[5]} g(K[2]) dK[2]} \right) dK[5] + c_2 \right] \right\} \right.$$

✓ **Maple** : cpu = 0.038 (sec), leaf count = 29

$$\left\{ \int^{y(x)} e^{\int h(-b) d_b} d_b - C1 \int e^{-\int g(x) dx} dx - C2 = 0 \right\}$$

2.1642 ODE No. 1642

$$f(x)h(y(x)) + g(x)y'(x) - \frac{j(y(x))y'(x)^2}{h(y(x))} + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.971122 (sec), leaf count = 0 , could not solve

`DSolve[f[x]*h[y[x]] + g[x]*Derivative[1][y][x] - (j[y[x]]*Derivative[1][y][x]^2)/h[y[x]] + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x), x), x) - j(y(x))/h(y(x))*diff(y(x), x)^2 + g(x)*diff(y(x), x) + f(x)*h(y(x)), x))`

2.1643 ODE No. 1643

$$f(x)y'(x) + g(x)j(y(x)) + h(y(x))y'(x)^2 + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.364469 (sec), leaf count = 0 , could not solve

`DSolve[g[x]*j[y[x]] + f[x]*Derivative[1][y][x] + h[y[x]]*Derivative[1][y][x]^2 + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve((1-D(j)(y(x)))/j(y(x))*diff(y(x), x)^2 + f(x)*diff(y(x), x) + diff(diff(y(x), x), x) + g(x))`

2.1644 ODE No. 1644

$$h(y(x))y'(x)^2 + j(y(x))y'(x) + k(y(x)) + y''(x) = 0$$

✗ **Mathematica** : cpu = 52.3241 (sec), leaf count = 0 , could not solve

`DSolve[k[y[x]] + j[y[x]]*Derivative[1][y][x] + h[y[x]]*Derivative[1][y][x]^2 + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.563 (sec), leaf count = 59

$$\left\{ y(x) = ODESolStruc\left(-a, \left[\left(\frac{d}{d_a} - b(-a) \right) - b(-a) + h(-a) (-b(-a))^2 + j(-a) - b(-a) + k(-a) = 0 \right] \right)$$

2.1645 ODE No. 1645

$$(y'(x)^2 + 1)(y'(x)h(x, y(x)) + j(x, y(x))) + y''(x) = 0$$

✗ **Mathematica** : cpu = 0.144769 (sec), leaf count = 0 , could not solve

DSolve[(j[x, y[x]] + h[x, y[x]]*Derivative[1][y][x])*(1 + Derivative[1][y][x]^2) + Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(diff(diff(y(x), x), x) + (diff(y(x), x)^2 + 1) * (h(x, y(x)) * diff(y(x), x) + j(x, y(x))) = 0, y(x))

2.1646 ODE No. 1646

$$ay(x)(y'(x)^2 + 1)^2 + y''(x) = 0$$

✓ **Mathematica** : cpu = 10.7385 (sec), leaf count = 262

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{\sqrt{\frac{\#1^2(-a)+2c_1+1}{2c_1+1}} \sqrt{2\#1^2 a - 4c_1} E\left(\sin^{-1}\left(\sqrt{\frac{a}{2c_1+1}} \#1\right) \left| 1 + \frac{1}{2c_1} \right.\right)}{\sqrt{\frac{a}{2c_1+1}} \sqrt{\#1^2(-a) + 2c_1 + 1} \sqrt{2 - \frac{\#1^2 a}{c_1}}} \right] \& \right\} [c_2 + x] \right\}$$

✓ **Maple** : cpu = 0.167 (sec), leaf count = 94

$$\left\{ \int^{y(x)} a(-a^2 + 2 - C1) \frac{1}{\sqrt{-a(-a^2 + 2 - C1)(-a^2 a + 2 - C1 a - 1)}} d_{-a - x - C2} = 0, \int^{y(x)} -a(-a^2 + 2 - C1) \frac{1}{\sqrt{-a(-a^2 + 2 - C1)(-a^2 a + 2 - C1 a - 1)}} d_{-a - x - C2} = 0 \right\}$$

2.1647 ODE No. 1647

$$y''(x) - a(xy'(x) - y(x))^r = 0$$

✓ **Mathematica** : cpu = 50.9812 (sec), leaf count = 59

$$\left\{ \left\{ y(x) \rightarrow x \left(\int_1^x \left(\frac{1}{2} a K[2]^{2r} - \frac{1}{2} ar K[2]^{2r} + c_1 K[2]^{2r-2} \right)^{\frac{1}{1-r}} dK[2] + c_2 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.479 (sec), leaf count = 123

$$\left\{ y(x) = \left(\int -\frac{ar}{2} 2^{\frac{r}{r-1}} \left((-arx^2 + ax^2 + -C1)^{-1} \right)^{\frac{r}{r-1}} + \frac{a}{2} 2^{\frac{r}{r-1}} \left((-arx^2 + ax^2 + -C1)^{-1} \right)^{\frac{r}{r-1}} + \frac{C1}{2x^2} 2^{\frac{r}{r-1}} \right)^{\frac{r-1}{r}} \right\}$$

2.1648 ODE No. 1648

$$y''(x) - kx^a y(x)^b y'(x)^c = 0$$

✗ **Mathematica** : cpu = 0.0796613 (sec), leaf count = 0 , could not solve

`DSolve[-(k*x^a*y[x]^b*Derivative[1][y][x]^c) + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 2.064 (sec), leaf count = 413

$$\left\{ y(x) = \text{ODESolStruc} \left(-a e^{\int -b(-a) d_a + -C1}, \left[\left\{ \frac{d}{d_a} - b(-a) = -\frac{(-b(-a))^3}{(a-c+2)^2} \left(-a^b \left(-\frac{(a-c+2)(-a)}{-b(-a)(b+} \right. \right. \right. \right. \right.$$

2.1649 ODE No. 1649

$$h(x, y(x)) \left(y'(x) - \frac{y(x)}{x} \right)^a + y''(x) = 0$$

✗ **Mathematica** : cpu = 2.60542 (sec), leaf count = 0 , could not solve

`DSolve[h[x, y[x]]*(-(y[x]/x) + Derivative[1][y][x])^a + Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x), x), x) + (diff(y(x), x) - y(x)/x)^a * h(x, y(x)) = 0, y(x))`

2.1650 ODE No. 1650

$$y''(x) - a\sqrt{y'(x)^2 + 1} = 0$$

✓ **Mathematica** : cpu = 0.0228827 (sec), leaf count = 30

$$\left\{ \left\{ y(x) \rightarrow \frac{\sinh(c_1) \sinh(ax)}{a} + \frac{\cosh(c_1) \cosh(ax)}{a} + c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.238 (sec), leaf count = 18

$$\left\{ y(x) = \frac{\cosh(-C1 a + ax)}{a} + -C2 \right\}$$

2.1651 ODE No. 1651

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

✓ **Mathematica** : cpu = 0.263984 (sec), leaf count = 414

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

✓ **Maple** : cpu = 0.16 (sec), leaf count = 31

$$\left\{ y(x) = \int \operatorname{RootOf}\left(x - \int^{-z} \left(a\sqrt{-f^2 + 1} + b\right)^{-1} d_f + _C1\right) dx + _C2 \right\}$$

2.1652 ODE No. 1652

$$y''(x) - a\sqrt{by(x)^2 + y'(x)^2} = 0$$

✗ **Mathematica** : cpu = 0.784386 (sec), leaf count = 0 , could not solve

`DSolve[-(a*sqrt[b*y[x]^2 + Derivative[1][y][x]^2]) + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.313 (sec), leaf count = 36

$$\left\{ y(x) = e^{\int \operatorname{RootOf}\left(x - \int^{-z} \left(-f^2 + a\sqrt{-f^2 + b}\right)^{-1} d_f + _C1\right) dx + _C2} \right\}$$

2.1653 ODE No. 1653

$$y''(x) - a(y'(x)^2 + 1)^{3/2} = 0$$

✓ **Mathematica** : cpu = 0.0663388 (sec), leaf count = 75

$$\left\{ \left\{ y(x) \rightarrow c_2 - \frac{i\sqrt{a^2x^2 + 2ac_1x + c_1^2 - 1}}{a} \right\}, \left\{ y(x) \rightarrow c_2 + \frac{i\sqrt{a^2x^2 + 2ac_1x + c_1^2 - 1}}{a} \right\} \right\}$$

✓ **Maple** : cpu = 0.135 (sec), leaf count = 55

$$\left\{ y(x) = \frac{(-C1 a + ax + 1)(-C1 a + ax - 1)}{a} \sqrt{-(-C1^2 a^2 + 2-C1 a^2 x + a^2 x^2 - 1)^{-1} + -C2} \right\}$$

2.1654 ODE No. 1654

$$y''(x) - 2ax(y'(x)^2 + 1)^{3/2} = 0$$

✓ **Mathematica** : cpu = 0.289008 (sec), leaf count = 308

$$\left\{ \left\{ y(x) \rightarrow c_2 - \frac{\sqrt{\frac{ax^2+c_1-1}{c_1-1}} \sqrt{\frac{ax^2+c_1+1}{c_1+1}} \left(F\left(i \sinh^{-1}\left(x \sqrt{\frac{a}{c_1+1}} \right) \middle| \frac{c_1+1}{c_1-1} \right) + (c_1 - 1) E\left(i \sinh^{-1}\left(x \sqrt{\frac{a}{c_1+1}} \right) \middle| \frac{c_1+1}{c_1-1} \right) \right)}{\sqrt{\frac{a}{c_1+1}} \sqrt{a^2x^4 + 2ac_1x^2 + c_1^2 - 1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.186 (sec), leaf count = 49

$$\left\{ y(x) = \int \sqrt{-(a^2x^4 + 4-C1 a^2x^2 + 4-C1^2 a^2 - 1)^{-1} a(x^2 + 2-C1)} dx + -C2 \right\}$$

2.1655 ODE No. 1655

$$y''(x) - ay(x)(y'(x)^2 + 1)^{3/2} = 0$$

✓ **Mathematica** : cpu = 0.833219 (sec), leaf count = 350

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{\sqrt{\frac{\#1^2 a + 2c_1 - 2}{c_1 - 1}} \sqrt{\frac{\#1^2 a + 2c_1 + 2}{c_1 + 1}} \left(F\left(i \sinh^{-1}\left(\sqrt{\frac{a}{2c_1 + 2}} \#1 \right) \middle| \frac{c_1 + 1}{c_1 - 1} \right) + (c_1 - 1) E\left(i \sinh^{-1}\left(\sqrt{\frac{a}{2c_1 + 2}} \#1 \right) \middle| \frac{c_1 + 1}{c_1 - 1} \right) \right)}{\sqrt{\frac{a}{2c_1 + 2}} \sqrt{\#1^4 a^2 + 4\#1^2 ac_1 + 4c_1^2 - 4}} \right] \right\} \right\}$$

✓ **Maple** : cpu = 0.218 (sec), leaf count = 106

$$\left\{ \int^{y(x)} a(-a^2 + 2_C1) \frac{1}{\sqrt{-_a^4 a^2 - 4_C1_a^2 a^2 - 4_C1^2 a^2 + 4}} d_a - x - _C2 = 0, \int^{y(x)} -a(-a^2 -$$

2.1656 ODE No. 1656

$$y''(x) - a(y'(x)^2 + 1)^{3/2} (bx + c + y(x)) = 0$$

✗ **Mathematica** : cpu = 100.306 (sec), leaf count = 0 , could not solve

DSolve[-(a*(c + b*x + y[x])*(1 + Derivative[1][y][x]^2)^(3/2)) + Derivative[2][y][x] =

✓ **Maple** : cpu = 0.747 (sec), leaf count = 771

$$\left\{ y(x) = -bx + \text{RootOf} \left(-x + \int^{-z} \frac{1}{(-f^4 a^2 + 4_f^3 a^2 c + 4_f^2 a^2 c^2 - 4_C1_f^2 a^2 - 8_C1_f a^2 c + 4} \right. \right.$$

2.1657 ODE No. 1657

$$y''(x) + y(x)^3 y'(x) - y(x) y'(x) \sqrt{4y'(x) + y(x)^4} = 0$$

✓ **Mathematica** : cpu = 0.150159 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow \sqrt{2} e^{c_1} \tan \left(2\sqrt{2} e^{3c_1} (c_2 + x) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.274 (sec), leaf count = 35

$$\left\{ y(x) = \frac{1}{_C1} \tan \left((_C2 + x) (_C1^2)^{-\frac{3}{2}} \right), y(x) = \frac{1}{_C1} \tanh \left((_C2 + x) (_C1^2)^{-\frac{3}{2}} \right) \right\}$$

2.1658 ODE No. 1658

$$y''(x) - h(y'(x), ax + by(x)) = 0$$

✗ **Mathematica** : cpu = 0.114494 (sec), leaf count = 0 , could not solve

DSolve[-h[Derivative[1][y][x], a*x + b*y[x]] + Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.152 (sec), leaf count = 117

$$\left\{ y(x) = \text{ODESolStruc} \left(-\frac{a(\int_b(_a) d_a + _C1) - b_a}{b}, \left[\left\{ \frac{d}{d_a} b(_a) = -h \left(-\frac{a_b(_a) - b}{_b(_a) b}, b_a \right) \right\} \right] \right)$$

2.1659 ODE No. 1659

$$y''(x) - y(x)h\left(x, \frac{y'(x)}{y(x)}\right) = 0$$

✗ **Mathematica** : cpu = 10.2352 (sec), leaf count = 0 , could not solve

`DSolve[-(h[x, Derivative[1][y][x]/y[x]]*y[x]) + Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.097 (sec), leaf count = 60

$$\left\{ y(x) = ODESolStruc\left(e^{\int_{-a}^x h(_a, \frac{y'(_a)}{y(_a)}) d_a - C1}, \left[\frac{d}{d_a} b(_a) = -(_b(_a))^2 + h(_a, _b(_a))\right], _a = x, \dots \right.$$

2.1660 ODE No. 1660

$$y''(x) - x^{n-2}h(x^{-n}y(x), x^{1-n}y'(x)) = 0$$

✗ **Mathematica** : cpu = 4.51716 (sec), leaf count = 0 , could not solve

`DSolve[-(x^(-2 + n)*h[y[x]/x^n, x^(1 - n)*Derivative[1][y][x]]) + Derivative[2][y][x]`

✓ **Maple** : cpu = 0.934 (sec), leaf count = 132

$$\left\{ y(x) = ODESolStruc\left(\frac{_a}{e^{-(\int_{-a}^x h(_a, \frac{y'(_a)}{y(_a)}) d_a - C1)^n}}, \left[\frac{d}{d_a} b(_a) = (_a n^2 - _a n - h(_a, \frac{b(_a) _a n}{_b(_a)})\right], \dots \right.$$

2.1661 ODE No. 1661

$$8y''(x) + 9y'(x)^4 = 0$$

✓ **Mathematica** : cpu = 0.0310138 (sec), leaf count = 92

$$\left\{ \left\{ y(x) \rightarrow c_2 - \frac{1}{3} \sqrt[3]{-\frac{1}{3}(9x - 8c_1)^{2/3}} \right\}, \left\{ y(x) \rightarrow \frac{(9x - 8c_1)^{2/3}}{3\sqrt[3]{3}} + c_2 \right\}, \left\{ y(x) \rightarrow \frac{(-1)^{2/3}(9x - 8c_1)^{2/3}}{3\sqrt[3]{3}} \right\} \right.$$

✓ **Maple** : cpu = 0.085 (sec), leaf count = 51

$$\left\{ y(x) = (_C1 + x)^{\frac{2}{3}} + _C2, y(x) = \frac{i\sqrt{3} - 1}{2}(_C1 + x)^{\frac{2}{3}} + _C2, y(x) = -\frac{i\sqrt{3} + 1}{2}(_C1 + x)^{\frac{2}{3}} + _C2 \right.$$

2.1662 ODE No. 1662

$$ay''(x) + cy(x) + h(y'(x)) = 0$$

✗ **Mathematica** : cpu = 1.37831 (sec), leaf count = 0 , could not solve

DSolve[h[Derivative[1][y][x]] + c*y[x] + a*Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.395 (sec), leaf count = 56

$$\left\{ y(x) = ODESolStruc\left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) + \frac{h(-b(-a)) + c_a}{a} = 0 \right], \left\{ -a = y(x), -b(-a) \right. \right. \right.$$

2.1663 ODE No. 1663

$$-xy(x)^n + xy''(x) + 2y'(x) = 0$$

✗ **Mathematica** : cpu = 0.0333075 (sec), leaf count = 0 , could not solve

DSolve[-(x*y[x]^n) + 2*Derivative[1][y][x] + x*Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.944 (sec), leaf count = 151

$$\left\{ y(x) = ODESolStruc\left(-a e^{\int -b(-a) d_a + C1}, \left[\left\{ \frac{d}{d_a} b(-a) = \left(-\frac{a^n n^2}{4} + \frac{a^n n}{2} - \frac{a n}{2} - \frac{a^n}{4} + \frac{3}{2} \right. \right. \right. \right.$$

2.1664 ODE No. 1664

$$ax^m y(x)^n + xy''(x) + 2y'(x) = 0$$

✗ **Mathematica** : cpu = 0.508646 (sec), leaf count = 0 , could not solve

DSolve[a*x^m*y[x]^n + 2*Derivative[1][y][x] + x*Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 3.157 (sec), leaf count = 185

$$\left\{ y(x) = ODESolStruc\left(-a e^{\int -b(-a) d_a + C1}, \left[\left\{ \frac{d}{d_a} b(-a) = \frac{(-a^n a n^2 - 2_a^n a n + _a m^2 - _a m n + (m} \right. \right. \right.$$

2.1665 ODE No. 1665

$$xy''(x) + 2y'(x) + xe^{y(x)} = 0$$

✗ **Mathematica** : cpu = 0.356855 (sec), leaf count = 0 , could not solve

`DSolve[E^y[x]*x + 2*Derivative[1][y][x] + x*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.628 (sec), leaf count = 84

$$\left\{ y(x) = ODESolStruc \left(\int b(a) da - 2 C1, \left[\frac{d}{da} b(a) = (e^{-a} - 2) (b(a))^3 + b(a) \right] \right) \right.$$

2.1666 ODE No. 1666

$$ay'(x) + bxe^{y(x)} + xy''(x) = 0$$

✗ **Mathematica** : cpu = 0.575762 (sec), leaf count = 0 , could not solve

`DSolve[b*E^y[x]*x + a*Derivative[1][y][x] + x*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.955 (sec), leaf count = 93

$$\left\{ y(x) = ODESolStruc \left(\int b(a) da - 2 C1, \left[\frac{d}{da} b(a) = (be^{-a} - 2a + 2) (b(a))^3 - b(a) \right] \right) \right.$$

2.1667 ODE No. 1667

$$bx^{5-2a}e^{y(x)} + ay'(x) + xy''(x) = 0$$

✗ **Mathematica** : cpu = 0.611607 (sec), leaf count = 0 , could not solve

`DSolve[b*E^y[x]*x^(5 - 2*a) + a*Derivative[1][y][x] + x*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 1.523 (sec), leaf count = 124

$$\left\{ y(x) = ODESolStruc \left(\int b(a) da + 2a C1 - 6 \int b(a) da - 6 C1, \left[\frac{d}{da} b(a) = \dots \right] \right) \right.$$

2.1668 ODE No. 1668

$$xy''(x) - (1 - y(x))y'(x) = 0$$

✓ **Mathematica** : cpu = 0.071166 (sec), leaf count = 60

$$\left\{ \left\{ y(x) \rightarrow \sqrt{2}\sqrt{c_1+2} \tanh \left(\frac{1}{2} \left(\sqrt{2}\sqrt{c_1+2} \log(x) - 2\sqrt{2}\sqrt{c_1+2}c_2 \right) \right) + 2 \right\} \right\}$$

✓ **Maple** : cpu = 0.169 (sec), leaf count = 24

$$\left\{ y(x) = \frac{1}{-C1} \left(2-C1 + \tanh \left(\frac{\ln(x) - C2}{2-C1} \right) \right) \right\}$$

2.1669 ODE No. 1669

$$-x^2y'(x)^2 + xy''(x) + 2y'(x) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 102.666 (sec), leaf count = 126

Solve $\left[\int_1^{y(x)} \frac{x}{c_1 e^{xK[1]} + 2xK[1] + 1} dK[1] - \int_1^x \left(-\frac{y(x)}{c_1 e^{y(x)K[2]} + 2y(x)K[2] + 1} - \frac{c_1 e^{y(x)K[2]} + y(x)}{K[2] (c_1 e^{y(x)K[2]} + 2y(x)K[2] + 1)} \right) dx \right]$

✓ **Maple** : cpu = 0.125 (sec), leaf count = 32

$$\left\{ y(x) = \frac{1}{x} \text{RootOf} \left(-\ln(x) + C2 + \int^{-Z} -(e^{-f} C1 - 2_f - 1)^{-1} d_f \right) \right\}$$

2.1670 ODE No. 1670

$$a(xy'(x) - y(x))^2 - b + xy''(x) = 0$$

✓ **Mathematica** : cpu = 80.7614 (sec), leaf count = 50

$$\left\{ \left\{ y(x) \rightarrow x \left(\int_1^x \frac{\sqrt{-\frac{b}{a}} \tan \left(c_1 - a\sqrt{-\frac{b}{a}}K[2] \right)}{K[2]^2} dK[2] + c_2 \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.352 (sec), leaf count = 35

$$\left\{ y(x) = \left(\int \frac{i}{x^2} \tan \left(-i\sqrt{a}\sqrt{bx} + C1 \right) \sqrt{b} \frac{1}{\sqrt{a}} dx + C2 \right) x \right\}$$

2.1671 ODE No. 1671

$$2xy''(x) + y'(x)^3 + y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0342872 (sec), leaf count = 59

$$\left\{ \left\{ y(x) \rightarrow c_2 - 2ie^{c_1} \sqrt{e^{2c_1} - x} \right\}, \left\{ y(x) \rightarrow c_2 + 2ie^{c_1} \sqrt{e^{2c_1} - x} \right\} \right\}$$

✓ **Maple** : cpu = 0.093 (sec), leaf count = 35

$$\left\{ y(x) = -2 \frac{\sqrt{-C1 x - 1}}{-C1} + -C2, y(x) = 2 \frac{\sqrt{-C1 x - 1}}{-C1} + -C2 \right\}$$

2.1672 ODE No. 1672

$$x^2 y''(x) - a(y(x)^n - y(x)) = 0$$

✗ **Mathematica** : cpu = 17.4745 (sec), leaf count = 0 , could not solve

DSolve[-(a*(-y[x] + y[x]^n)) + x^2*Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 1.101 (sec), leaf count = 67

$$\left\{ y(x) = ODESolStruc \left(-a, \left[\left\{ \frac{d}{d_a} b(-a) = (-_a^n a + a_a) (-b(-a))^3 - (-b(-a))^2 \right\} \right], \left\{ -a = y(x), \right. \right.$$

2.1673 ODE No. 1673

$$a(e^{y(x)} - 1) + x^2 y''(x) = 0$$

✗ **Mathematica** : cpu = 31.2901 (sec), leaf count = 0 , could not solve

DSolve[a*(-1 + E^y[x]) + x^2*Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.809 (sec), leaf count = 65

$$\left\{ y(x) = ODESolStruc \left(-a, \left[\left\{ \frac{d}{d_a} b(-a) = (ae^{-a} - a) (-b(-a))^3 - (-b(-a))^2 \right\} \right], \left\{ -a = y(x), -b(-a) \right. \right.$$

2.1674 ODE No. 1674

$$y(x) (a(a+b) + b^2 c^2 x^{2b}) - x(2a+b-1)y'(x) + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0607976 (sec), leaf count = 106

$$\left\{ \left\{ y(x) \rightarrow c_2 2^{-\frac{a+b}{b}} c^{\frac{a+b}{b}-1} (x^{2b})^{\frac{a+b}{2b}-\frac{1}{2}} \sin\left(c\sqrt{x^{2b}}\right) + c_1 2^{-\frac{a}{b}} c^{a/b} (x^{2b})^{\frac{a}{2b}} \cos\left(c\sqrt{x^{2b}}\right) \right\} \right\}$$

✓ **Maple** : cpu = 0.071 (sec), leaf count = 27

$$\{y(x) = _C1 \sin(x^b c) x^a + _C2 \cos(x^b c) x^a\}$$

2.1675 ODE No. 1675

$$x^k (-h(x^k y(x), k y(x) + x y'(x))) + (a+1) x y'(x) + x^2 y''(x) = 0$$

✗ **Mathematica** : cpu = 3.48185 (sec), leaf count = 0 , could not solve

`DSolve[-(x^k*h[x^k*y[x], k*y[x] + x*Derivative[1][y][x]]) + (1 + a)*x*Derivative[1][y][x] + x^2*Derivative[2][y][x], y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(x^2*diff(diff(y(x), x), x) + (a+1)*x*diff(y(x), x) - x^k*h(x^k*y(x), x*diff(y(x), x) + k*y(x)), x), y(x), x)`

2.1676 ODE No. 1676

$$a(x y'(x) - y(x))^2 - b x^2 + x^2 y''(x) = 0$$

✓ **Mathematica** : cpu = 50.8611 (sec), leaf count = 133

$$\left\{ \left\{ y(x) \rightarrow x \left(c_2 + \int_1^x \frac{i\sqrt{a}\sqrt{b} Y_1(-i\sqrt{a}\sqrt{b} K[2]) - i\sqrt{a}\sqrt{b} c_1 J_1(i\sqrt{a}\sqrt{b} K[2])}{a K[2] (c_1 J_0(i\sqrt{a}\sqrt{b} K[2]) + Y_0(-i\sqrt{a}\sqrt{b} K[2]))} dK[2] \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.502 (sec), leaf count = 79

$$\left\{ y(x) = ODESolStruc \left(_a \left(\int _b(_a) d_a + _C1 \right), \left[\left\{ \frac{d}{d_a} _b(_a) = -a_a(_b(_a))^2 - 2 \frac{b(_a)}{_a} \right\} \right] \right) \right\}$$

2.1677 ODE No. 1677

$$ay(x)y'(x)^2 + bx + x^2y''(x) = 0$$

✗ **Mathematica** : cpu = 48.006 (sec), leaf count = 0 , could not solve

`DSolve[b*x + a*y[x]*Derivative[1][y][x]^2 + x^2*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 2.275 (sec), leaf count = 101

$$\left\{ y(x) = \text{ODESolStruc} \left(_a e^{\int -b(_a) d_a + _C1}, \left[\left\{ \frac{d}{d_a} - b(_a) = (a_a^3 + b) (_b(_a))^3 + (2_a^2 a + 1) (_ \right. \right. \right. \right.$$

2.1678 ODE No. 1678

$$x^2y''(x) - \sqrt{ax^2y'(x)^2 + by(x)^2} = 0$$

✗ **Mathematica** : cpu = 1.62151 (sec), leaf count = 0 , could not solve

`DSolve[-Sqrt[b*y[x]^2 + a*x^2*Derivative[1][y][x]^2] + x^2*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.277 (sec), leaf count = 60

$$\left\{ y(x) - e^{\int^{\ln(x)} \text{RootOf} \left(f^{-z} - y(x) \left(-a^2 y(x) - y(x) _a - \sqrt{(y(x))^2 (_a^2 a + b)} \right)^{-1} d_a - _b + _C1 \right) d_b + _C2} = 0 \right\}$$

2.1679 ODE No. 1679

$$(x^2 + 1)y''(x) + y'(x)^2 + 1 = 0$$

✓ **Mathematica** : cpu = 0.0852991 (sec), leaf count = 33

$$\left\{ \left\{ y(x) \rightarrow -x \cot(c_1) + \csc^2(c_1) \log(-x \sin(c_1) - \cos(c_1)) + c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.181 (sec), leaf count = 27

$$\left\{ y(x) = \frac{x}{_C1} + \ln(_C1 x - 1) + \frac{\ln(_C1 x - 1)}{_C1^2} + _C2 \right\}$$

2.1680 ODE No. 1680

$$x^4(-y'(x)^2) + 4x^2y''(x) + 4y(x) = 0$$

✗ **Mathematica** : cpu = 10.9259 (sec), leaf count = 0 , could not solve

`DSolve[4*y[x] - x^4*Derivative[1][y][x]^2 + 4*x^2*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.645 (sec), leaf count = 103

$$\left\{ y(x) = ODESolStruc \left(\frac{-a}{(e^{\int -b(-a) d_a + C1})^2}, \left[\left\{ \frac{d}{d_a} - b(-a) = (-a^2 + 7_a) (-b(-a))^3 + (-a - 5) \right. \right. \right. \right.$$

2.1681 ODE No. 1681

$$ay(x)^3 + 9x^2y''(x) + 2y(x) = 0$$

✗ **Mathematica** : cpu = 3.50242 (sec), leaf count = 0 , could not solve

`DSolve[2*y[x] + a*y[x]^3 + 9*x^2*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.062 (sec), leaf count = 31

$$\left\{ y(x) = C2 \operatorname{JacobiSN} \left(\left(\frac{\sqrt{2}}{2x^3} \sqrt{x^{\frac{20}{3}} a + C1} \right) C2, i \right) \sqrt[3]{x} \right\}$$

2.1682 ODE No. 1682

$$x^3(y''(x) + y(x)y'(x) - y(x)^3) + 12xy(x) + 24 = 0$$

✗ **Mathematica** : cpu = 22.6462 (sec), leaf count = 0 , could not solve

`DSolve[24 + 12*x*y[x] + x^3*(-y[x]^3 + y[x]*Derivative[1][y][x] + Derivative[2][y][x]) == 0, y[x], x]`

✓ **Maple** : cpu = 0.609 (sec), leaf count = 102

$$\left\{ y(x) = ODESolStruc \left(-a e^{\int -b(-a) d_a + C1}, \left[\left\{ \frac{d}{d_a} - b(-a) = (-a^3 - a^2 + 14_a + 24) (-b(-a))^3 - \right. \right. \right. \right.$$

2.1683 ODE No. 1683

$$x^3 y''(x) - a(xy'(x) - y(x))^2 = 0$$

✓ **Mathematica** : cpu = 0.0730892 (sec), leaf count = 26

$$\left\{ \left\{ y(x) \rightarrow -\frac{x \log\left(a\left(-\frac{c_1}{x} - c_2\right)\right)}{a} \right\} \right\}$$

✓ **Maple** : cpu = 0.117 (sec), leaf count = 23

$$\left\{ y(x) = -\frac{x}{a} \ln\left(\frac{a(-C1 x - C2)}{x}\right) \right\}$$

2.1684 ODE No. 1684

$$xy(x) (a - 2x^2 y(x)^2 + 3xy(x)) + b + 2x^3 y''(x) + x^2(2xy(x) + 9)y'(x) = 0$$

✗ **Mathematica** : cpu = 62.1413 (sec), leaf count = 0 , could not solve

`DSolve[b + x*y[x]*(a + 3*x*y[x] - 2*x^2*y[x]^2) + x^2*(9 + 2*x*y[x])*Derivative[1][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 1.805 (sec), leaf count = 108

$$\left\{ y(x) = ODESolStruc\left(-a e^{\int -b(-a) d_a + C1}, \left[\frac{d}{d_a} b(-a) = \left(-a^3 + \frac{a^2}{2} + \frac{a a}{2} - \frac{5 a}{2} + \frac{b}{2}\right) (-b) \right] \right)$$

2.1685 ODE No. 1685

$$axy(x) + b - (kx^{k-1} - 12x^2) (3y'(x) + y(x)^2) + 2(4x^3 - x^k) (y''(x) + y(x)y'(x) - y(x)^3) = 0$$

✗ **Mathematica** : cpu = 5.2595 (sec), leaf count = 0 , could not solve

`DSolve[b + a*x*y[x] - (-12*x^2 + k*x^(-1 + k))*(y[x]^2 + 3*Derivative[1][y][x]) + 2*(4*x^3 + y[x]^3 + y[x]*Derivative[1][y][x] + Derivative[2][y][x]) == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(2*(-x^k+4*x^3)*(diff(diff(y(x),x),x)+y(x)*diff(y(x),x)-y(x)^3)-(k*x^(k-1)-12*x^2)*(3*diff(y(x),x)+y(x)^2)+a*x*y(x)+b=0,y(x))`

2.1686 ODE No. 1686

$$a^2 y(x)^n + x^4 y''(x) = 0$$

✗ **Mathematica** : cpu = 0.0332063 (sec), leaf count = 0 , could not solve

DSolve[a^2*y[x]^n + x^4*Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 1.063 (sec), leaf count = 160

$$\left\{ y(x) = ODESolStruc \left(-a e^{\int -b(-a) d_a + -C1}, \left[\frac{d}{d_a} - b(-a) = \left(\frac{n^2 - a^n a^2}{4} - \frac{n - a^n a^2}{2} + \frac{a^n a^2}{4} - \frac{a n}{2} \right) \right] \right. \right.$$

2.1687 ODE No. 1687

$$x^4 y''(x) - x(x^2 + 2y(x)) y'(x) + 4y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.068986 (sec), leaf count = 262

$$\left\{ \left\{ y(x) \rightarrow - \frac{x^3 \left(i \left(-\frac{\sqrt{-c_1-1}}{\sqrt{c_1}} + \frac{i}{\sqrt{c_1}} \right) \sqrt{c_1} c_2 x^{-1+i \left(-\frac{\sqrt{-c_1-1}}{\sqrt{c_1}} + \frac{i}{\sqrt{c_1}} \right) \sqrt{c_1}} + i \left(\frac{\sqrt{-c_1-1}}{\sqrt{c_1}} + \frac{i}{\sqrt{c_1}} \right) \sqrt{c_1} x^{-1+i \left(\frac{\sqrt{-c_1-1}}{\sqrt{c_1}} + \frac{i}{\sqrt{c_1}} \right) \sqrt{c_1}} \right. \right.}{c_2 x^{i \left(-\frac{\sqrt{-c_1-1}}{\sqrt{c_1}} + \frac{i}{\sqrt{c_1}} \right) \sqrt{c_1}} + x^{i \left(\frac{\sqrt{-c_1-1}}{\sqrt{c_1}} + \frac{i}{\sqrt{c_1}} \right) \sqrt{c_1}}} \right. \right.$$

✓ **Maple** : cpu = 0.235 (sec), leaf count = 23

$$\{y(x) = \tanh(-\ln(x) - C1 + -C2 - C1) x^2 - C1 + x^2\}$$

2.1688 ODE No. 1688

$$x^4 y''(x) - x^2 y'(x) (y'(x) + x) + 4y(x)^2 = 0$$

✓ **Mathematica** : cpu = 249.775 (sec), leaf count = 166

$$\text{Solve} \left[\int_1^{y(x)} \frac{1}{c_1 x^2 \left(-e^{\frac{K[1]}{x^2}} \right) + 4K[1] + 2x^2} dK[1] - \int_1^x \left(\frac{K[2] \left(c_1 e^{\frac{y(x)}{K[2]^2}} + 2 \left(-\frac{y(x)}{K[2]^2} - 1 \right) \right)}{c_1 K[2]^2 \left(-e^{\frac{y(x)}{K[2]^2}} \right) + 2K[2]^2 + 4y(x)} + 2 \left(\frac{1}{K[2]} \right) \right. \right.$$

✓ **Maple** : cpu = 0.258 (sec), leaf count = 32

$$\left\{ y(x) = \text{RootOf} \left(-\ln(x) + -C2 - \int^{-Z} (e^{-f} - C1 + 4 - f + 2)^{-1} d_f \right) x^2 \right\}$$

2.1689 ODE No. 1689

$$x^4 y''(x) + (xy'(x) - y(x))^3 = 0$$

✓ **Mathematica** : cpu = 0.643535 (sec), leaf count = 329

$$\left\{ \left\{ y(x) \rightarrow -ix \log \left(-\frac{\sqrt{-8ic_1x^2 - \sinh(2c_2) - \cosh(2c_2)}}{4c_1x} - \frac{i \sinh(c_2)}{4c_1x} - \frac{i \cosh(c_2)}{4c_1x} \right) \right\}, \left\{ y(x) \rightarrow -ix \right. \right.$$

✓ **Maple** : cpu = 0.286 (sec), leaf count = 37

$$\left\{ y(x) = \left(-\arctan \left(\frac{1}{\sqrt{-C1 x^2 - 1}} \right) + -C2 \right) x, y(x) = \left(\arctan \left(\frac{1}{\sqrt{-C1 x^2 - 1}} \right) + -C2 \right) x \right\}$$

2.1690 ODE No. 1690

$$\sqrt{x}y''(x) - y(x)^{3/2} = 0$$

✗ **Mathematica** : cpu = 22.4557 (sec), leaf count = 0 , could not solve

`DSolve[-y[x]^(3/2) + Sqrt[x]*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.938 (sec), leaf count = 97

$$\left\{ y(x) = ODESolStruc \left(\frac{-a}{(e^{f-b(a)d_a+C1})^3}, \left[\left\{ \frac{d}{d_a} b(-a) = \left(-_a^{\frac{3}{2}} + 12_a \right) (_b(-a))^3 - 7(_b(-a) \right. \right. \right.$$

2.1691 ODE No. 1691

$$y''(x) (ax^2 + bx + c)^{3/2} - f \left(\frac{y(x)}{\sqrt{ax^2 + bx + c}} \right) = 0$$

✗ **Mathematica** : cpu = 61.7696 (sec), leaf count = 0 , could not solve

`DSolve[-f[y[x]/Sqrt[c + b*x + a*x^2]] + (c + b*x + a*x^2)^(3/2)*Derivative[2][y][x] ==`

✓ **Maple** : cpu = 1.129 (sec), leaf count = 254

$$\left\{ y(x) = RootOf \left(-2 a \arctan \left(\frac{2 a x + b}{\sqrt{4 a c - b^2}} \right) - 2 \int^{-z} \frac{a}{\sqrt{4 - C1 a^2 - 4 c - g^2 a + b^2 - g^2 + 8 \int F(-g) d_g}} \right. \right.$$

2.1692 ODE No. 1692

$$x^{\frac{n}{n+1}} y''(x) - y(x)^{\frac{2n+1}{n+1}} = 0$$

✗ **Mathematica** : cpu = 0.080715 (sec), leaf count = 0 , could not solve

`DSolve[-y[x]^((1 + 2*n)/(1 + n)) + x^(n/(1 + n))*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 3.887 (sec), leaf count = 165

$$\left\{ y(x) = ODESolStruc \left(-a \left(e^{\frac{(f_{-b(-a)} d_{-a} - C1)(n+2)}{n}} \right)^{-1}, \left\{ \frac{d}{d_{-a}} b(-a) = -\frac{(b(-a))^3}{n^2} \left(-a^{\frac{2n+1}{n+1}} n^2 - 2_{-a} n \right) \right\} \right. \right.$$

2.1693 ODE No. 1693

$$-h(y(x), f(x)y'(x)) + f(x)f'(x)y'(x) + f(x)^2 y''(x) = 0$$

✗ **Mathematica** : cpu = 0.999974 (sec), leaf count = 0 , could not solve

`DSolve[-h[y[x], f[x]*Derivative[1][y][x]] + f[x]*Derivative[1][f][x]*Derivative[1][y][x] + f[x]^2 Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.309 (sec), leaf count = 68

$$\left\{ y(x) = ODESolStruc \left(-a, \left\{ \frac{d}{d_{-a}} b(-a) = -h(-a, (b(-a))^{-1}) (b(-a))^3 \right\}, \left\{ -a = y(x), -b(-a) = f(x) \right\} \right. \right.$$

2.1694 ODE No. 1694

$$y(x)y''(x) - a = 0$$

✓ **Mathematica** : cpu = 0.190446 (sec), leaf count = 115

$$\left\{ \left\{ y(x) \rightarrow \exp \left(\frac{-c_1 - 2a \operatorname{erf}^{-1} \left(-i \sqrt{\frac{2}{\pi}} \sqrt{a e^{\frac{c_1}{a}} (c_2 + x)^2} \right)^2}{2a} \right) \right\}, \left\{ y(x) \rightarrow \exp \left(\frac{-c_1 - 2a \operatorname{erf}^{-1} \left(i \sqrt{\frac{2}{\pi}} \sqrt{a e^{\frac{c_1}{a}} (c_2 + x)^2} \right)^2}{2a} \right) \right\} \right.$$

✓ **Maple** : cpu = 0.317 (sec), leaf count = 55

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{2a \ln(-a) - 2_{-C1} a}} d_{-a} - x - _{C2} = 0, \int^{y(x)} -\frac{1}{\sqrt{2a \ln(-a) - 2_{-C1} a}} d_{-a} - x - _{C2} = 0 \right.$$

2.1695 ODE No. 1695

$$y(x)y''(x) - ax = 0$$

✗ **Mathematica** : cpu = 25.5784 (sec), leaf count = 0 , could not solve

`DSolve[-(a*x) + y[x]*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.719 (sec), leaf count = 103

$$\left\{ y(x) = ODESolStruc \left(-a \left(e^{\int -b(-a) d_{-a} - C1} \right)^{\frac{3}{2}}, \left[\frac{d}{d_{-a}} - b(-a) = \frac{(3_{-a}^2 - 4a) (_b(-a))^3}{4_{-a}} + 2 (_b(-a)) \right] \right. \right.$$

2.1696 ODE No. 1696

$$y(x)y''(x) - ax^2 = 0$$

✗ **Mathematica** : cpu = 24.1285 (sec), leaf count = 0 , could not solve

`DSolve[-(a*x^2) + y[x]*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.638 (sec), leaf count = 102

$$\left\{ y(x) = ODESolStruc \left(-a \left(e^{\int -b(-a) d_{-a} - C1} \right)^2, \left[\frac{d}{d_{-a}} - b(-a) = \frac{(2_{-a}^2 - a) (_b(-a))^3}{-a} + 3 (_b(-a)) \right] \right. \right.$$

2.1697 ODE No. 1697

$$-a + y(x)y''(x) + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0612145 (sec), leaf count = 94

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{2a^2c_2x + a^2c_2^2 + a^2x^2 - e^{2c_1}}}{\sqrt{a}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{2a^2c_2x + a^2c_2^2 + a^2x^2 - e^{2c_1}}}{\sqrt{a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.229 (sec), leaf count = 39

$$\left\{ y(x) = \sqrt{ax^2 - 2_{-}C1 x + 2_{-}C2}, y(x) = -\sqrt{ax^2 - 2_{-}C1 x + 2_{-}C2} \right\}$$

2.1698 ODE No. 1698

$$-ax - b + y(x)y''(x) + y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0399446 (sec), leaf count = 72

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{ax^3 + 3bx^2 + 3c_2x + 6c_1}}{\sqrt{3}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{ax^3 + 3bx^2 + 3c_2x + 6c_1}}{\sqrt{3}} \right\} \right\}$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x),x),x)*y(x)+y(x)^2-a*x-b=0,y(x))`

2.1699 ODE No. 1699

$$y(x)y''(x) + y'(x)^2 - y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0370913 (sec), leaf count = 40

$$\left\{ \left\{ y(x) \rightarrow c_1 \left(-W \left(-\frac{e^{-\frac{x}{c_1} - \frac{c_2}{c_1} - 1}}{c_1} \right) \right) - c_1 \right\} \right\}$$

✓ **Maple** : cpu = 0.275 (sec), leaf count = 33

$$\left\{ y(x) = -_C1 \left(\text{lambertW} \left(-\frac{e^{-1}}{-C1} \left(e^{-\frac{C2}{C1}} \right)^{-1} \left(e^{-\frac{x}{C1}} \right)^{-1} \right) + 1 \right) \right\}$$

2.1700 ODE No. 1700

$$y(x)y''(x) - y'(x)^2 + 1 = 0$$

✓ **Mathematica** : cpu = 0.0773494 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow -e^{-c_1} \sinh(e^{c_1}(c_2 + x)) \right\}, \left\{ y(x) \rightarrow e^{-c_1} \sinh(e^{c_1}(c_2 + x)) \right\} \right\}$$

✓ **Maple** : cpu = 0.465 (sec), leaf count = 79

$$\left\{ y(x) = \frac{-C1}{2} \left(1 \left(e^{-\frac{C2}{C1}} \right)^{-2} \left(e^{-\frac{x}{C1}} \right)^{-2} - 1 \right) e^{-\frac{C2}{C1}} e^{-\frac{x}{C1}}, y(x) = \frac{C1}{2} \left(\left(e^{-\frac{C2}{C1}} \right)^2 \left(e^{-\frac{x}{C1}} \right)^2 - 1 \right) \left(e^{-\frac{C2}{C1}} \right)^{-1} \left(e^{-\frac{x}{C1}} \right)^{-1} \right\}$$

2.1701 ODE No. 1701

$$y(x)y''(x) - y'(x)^2 - 1 = 0$$

✓ **Mathematica** : cpu = 0.181295 (sec), leaf count = 97

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} e^{-e^{c_1} x - 2c_1 - e^{c_1} c_2} (e^{2e^{c_1}(c_2+x)} + e^{2c_1}) \right\}, \left\{ y(x) \rightarrow \frac{1}{2} (e^{-e^{c_1} x - 2c_1 - e^{c_1} c_2} + e^{e^{c_1} x + e^{c_1} c_2}) \right\} \right\}$$

✓ **Maple** : cpu = 0.356 (sec), leaf count = 79

$$\left\{ y(x) = \frac{-C1}{2} \left(1 \left(e^{\frac{-C2}{-C1}} \right)^{-2} \left(e^{\frac{x}{-C1}} \right)^{-2} + 1 \right) e^{\frac{-C2}{-C1}} e^{\frac{x}{-C1}}, y(x) = \frac{C1}{2} \left(\left(e^{\frac{-C2}{-C1}} \right)^2 \left(e^{\frac{x}{-C1}} \right)^2 + 1 \right) \left(e^{\frac{-C2}{-C1}} \right)^{-1} \left(e^{\frac{x}{-C1}} \right)^{-1} \right\}$$

2.1702 ODE No. 1702

$$e^{2x}(ay(x)^4 + b) + e^x y(x)(cy(x)^2 + d) + y(x)y''(x) - y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 6.63651 (sec), leaf count = 0 , could not solve

`DSolve[E^x*y[x]*(d + c*y[x]^2) + E^(2*x)*(b + a*y[x]^4) - Derivative[1][y][x]^2 + y[x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(diff(y(x), x), x)*y(x)-diff(y(x), x)^2+exp(x)*y(x)*(c*y(x)^2+d)+exp(2*x)*(b+a`

2.1703 ODE No. 1703

$$y(x)y''(x) - y'(x)^2 + y(x)^2(-\log(y(x))) = 0$$

✓ **Mathematica** : cpu = 0.0917378 (sec), leaf count = 63

$$\left\{ \left\{ y(x) \rightarrow e^{\frac{1}{2}(e^{c_2+x} - c_1 e^{-c_2-x})} \right\}, \left\{ y(x) \rightarrow e^{\frac{1}{2}(e^{-c_2-x} - c_1 e^{c_2+x})} \right\} \right\}$$

✓ **Maple** : cpu = 0.064 (sec), leaf count = 25

$$\left\{ y(x) = e^{-\frac{e^{2x}}{2e^x} \frac{C1}{2e^x}} e^{\frac{C2}{2e^x}} \right\}$$

2.1704 ODE No. 1704

$$y(x)^2 \left(\frac{f''(x)}{f(x)} - \frac{f'(x)^2}{f(x)^2} \right) + f(x)y(x)^3 + y(x)y''(x) - y'(x)^2 - y'(x) = 0$$

✗ **Mathematica** : cpu = 42.3763 (sec), leaf count = 0 , could not solve

```
DSolve[f[x]*y[x]^3 - Derivative[1][y][x] - Derivative[1][y][x]^2 + y[x]^2*(-  
(Derivative[1][f][x]^2/f[x]^2) + Derivative[2][f][x]/f[x]) + y[x]*Derivative[2][y][x]
```

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

```
dsolve(diff(diff(y(x),x),x)*y(x)-diff(y(x),x)^2-diff(y(x),x)+f(x)*y(x)^3+y(x)^2*(diff  
diff(f(x),x)^2/f(x)^2)=0,y(x))
```

2.1705 ODE No. 1705

$$-y(x)f'(x) + f(x)y'(x) + y(x)y''(x) - y'(x)^2 - y(x)^3 = 0$$

✗ **Mathematica** : cpu = 0.243323 (sec), leaf count = 0 , could not solve

```
DSolve[-y[x]^3 - y[x]*Derivative[1][f][x] + f[x]*Derivative[1][y][x] - Derivative[1][y][x]^2 + y[x]^2*Derivative[2][y][x]
```

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

```
dsolve(diff(diff(y(x),x),x)*y(x)-diff(y(x),x)^2+f(x)*diff(y(x),x)-diff(f(x),x)*y(x)-  
y(x)^3=0,y(x))
```

2.1706 ODE No. 1706

$$-y(x)f''(x) + f'(x)y'(x) + f(x)y(x)^3 + y(x)y''(x) - y'(x)^2 - y(x)^4 = 0$$

✗ **Mathematica** : cpu = 0.481076 (sec), leaf count = 0 , could not solve

```
DSolve[f[x]*y[x]^3 - y[x]^4 + Derivative[1][f][x]*Derivative[1][y][x] - Derivative[1][y][x]^2 + y[x]^2*Derivative[2][y][x]
```

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

```
dsolve(diff(diff(y(x),x),x)*y(x)-diff(y(x),x)^2+diff(f(x),x)*diff(y(x),x)-  
diff(diff(f(x),x),x)*y(x)+f(x)*y(x)^3-y(x)^4=0,y(x))
```

2.1707 ODE No. 1707

$$ay(x)y'(x) + by(x)^2 + y(x)y''(x) - y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0724847 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow c_2 e^{-\frac{bx}{a} - \frac{c_1 e^{-ax}}{a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.27 (sec), leaf count = 39

$$\left\{ y(x) = 1 e^{\frac{e^{-ax} C1}{a}} e^{\frac{b}{a^2}} \left(e^{\frac{bx}{a}} \right)^{-1} \left(e^{\frac{C2}{a}} \right)^{-1} \right\}$$

2.1708 ODE No. 1708

$$ay(x)y'(x) - 2ay(x)^2 + by(x)^3 + y(x)y''(x) - y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 46.4013 (sec), leaf count = 0 , could not solve

DSolve[-2*a*y[x]^2 + b*y[x]^3 + a*y[x]*Derivative[1][y][x] - Derivative[1][y][x]^2 + y

✓ **Maple** : cpu = 1.15 (sec), leaf count = 73

$$\left\{ y(x) = ODESolStruc \left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) - \frac{(-b(-a))^2 - a_a_b(-a) - b_a^3 + 2a_a^2}{-a} \right] \right) \right\}$$

2.1709 ODE No. 1709

$$2a^2y(x)^2 - (ay(x) - 1)y'(x) + ay(x) - 2b^2y(x)^3 + y(x)y''(x) - y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 61.7339 (sec), leaf count = 0 , could not solve

DSolve[a*y[x] + 2*a^2*y[x]^2 - 2*b^2*y[x]^3 - (-1 + a*y[x])*Derivative[1][y][x] - Deri

✓ **Maple** : cpu = 2.025 (sec), leaf count = 84

$$\left\{ y(x) = ODESolStruc \left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) - \frac{2b^2_a^3 - 2a^2_a^2 + a_a_b(-a) + (-b(-a))}{-a} \right] \right) \right\}$$

2.1710 ODE No. 1710

$$-y(x)(y(x) + 1) (b^2y(x)^2 - a^2) + (ay(x) - 1)y'(x) + y(x)y''(x) - y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 108.918 (sec), leaf count = 0 , could not solve

DSolve[-(y[x]*(1 + y[x])*(-a^2 + b^2*y[x]^2)) + (-1 + a*y[x])*Derivative[1][y][x] - D

✓ **Maple** : cpu = 2.878 (sec), leaf count = 91

$$\left\{ y(x) = ODESolStruc \left(-a, \left[\left(\frac{d}{d_a} - b(-a) \right) - b(-a) - \frac{-a^4b^2 + b^2_a a^3 - a^2_a a^2 - a_a a_b(-a) - _a a}{_a} \right] \right) \right.$$

2.1711 ODE No. 1711

$$y(x)^2 \log(y(x)) (\cos^2(x) - n^2 \cot^2(x)) + y(x)y''(x) - y'(x)^2 + y(x)y'(x)(\tan(x) + \cot(x)) = 0$$

✗ **Mathematica** : cpu = 300.003 (sec), leaf count = 0 , timed out

\$Aborted

✓ **Maple** : cpu = 0.514 (sec), leaf count = 81

$$\left\{ y(x) = 1e^{\frac{J_n(\sin(x))_C1}{\sin(x)(J_{n+1}(\sin(x))Y_n(\sin(x)) - J_n(\sin(x))Y_{n+1}(\sin(x)))}} \left(e^{\frac{Y_n(\sin(x))_C2}{\sin(x)(J_{n+1}(\sin(x))Y_n(\sin(x)) - J_n(\sin(x))Y_{n+1}(\sin(x)))}} \right)^{-1} \right\}$$

2.1712 ODE No. 1712

$$-f(x)y(x)y'(x) - g(x)y(x)^2 + y(x)y''(x) - y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 10.2696 (sec), leaf count = 70

$$\left\{ \left\{ y(x) \rightarrow c_2 \exp \left(\int_1^x \left(c_1 e^{\int_1^{K[3]} f(K[1]) dK[1]} + e^{\int_1^{K[3]} f(K[1]) dK[1]} \int_1^{K[3]} g(K[2]) e^{-\int_1^{K[2]} f(K[1]) dK[1]} dK[2] \right) dK[3] \right) \right. \right.$$

✓ **Maple** : cpu = 0.08 (sec), leaf count = 61

$$\left\{ y(x) = \frac{-C2}{e^{-C1} \int e^{\int f(x) dx} dx} e^{\int e^{\int f(x) dx} dx \int \frac{g(x)}{e^{\int f(x) dx}} dx} \left(e^{\int \frac{\int e^{\int f(x) dx} dx g(x)}{e^{\int f(x) dx}} dx} \right)^{-1} \right\}$$

2.1713 ODE No. 1713

$$-y(x) (g'(x) - y(x)^2 f'(x)) + y'(x) (f(x)y(x)^2 + g(x)) + y(x)y''(x) - y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 20.9663 (sec), leaf count = 0 , could not solve

DSolve[-(y[x]*(-y[x]^2*Derivative[1][f][x]) + Derivative[1][g][x])) + (g[x] + f[x]*y[x]^2), y[x], x]

✓ **Maple** : cpu = 0.298 (sec), leaf count = 60

$$\left\{ y(x) = \text{ODESolStruc} \left(-b(-a), \left[\left\{ \frac{\frac{d}{da} b(-a)}{-b(-a)} + \frac{f(-a) (-b(-a))^2 + C1 b(-a) - g(-a)}{-b(-a)} = 0 \right\} \right], \{ \right.$$

2.1714 ODE No. 1714

$$y(x)y''(x) + 3y(x)y'(x) - 3y'(x)^2 - y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0634205 (sec), leaf count = 25

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 e^x}{\sqrt{1 - 2e^{c_1 + x}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.294 (sec), leaf count = 69

$$\left\{ y(x) = -\frac{1}{2e^{-x} C1 - 2 C2} \sqrt{-(2e^{-x} C1 - 2 C2) e^x}, y(x) = \frac{1}{2e^{-x} C1 - 2 C2} \sqrt{-(2e^{-x} C1 - 2 C2) e^x} \right\}$$

2.1715 ODE No. 1715

$$y(x)y''(x) - ay'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0357009 (sec), leaf count = 26

$$\left\{ \left\{ y(x) \rightarrow c_2 (-ax - c_1 + x)^{\frac{1}{1-a}} \right\} \right\}$$

✓ **Maple** : cpu = 0.287 (sec), leaf count = 25

$$\left\{ y(x) = \left(\frac{1}{(1-a) (-C1 x - C2)} \right)^{(a-1)^{-1}} \right\}$$

2.1716 ODE No. 1716

$$a(y'(x)^2 + 1) + y(x)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.648853 (sec), leaf count = 172

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{\#1 \sqrt{1 - e^{2c_1} \#1^{-2a}} {}_2F_1\left(\frac{1}{2}, -\frac{1}{2a}; 1 - \frac{1}{2a}; e^{2c_1} \#1^{-2a}\right)}{\sqrt{e^{2c_1} \#1^{-2a} - 1}} \right] [c_2 + x] \right\}, \left\{ y(x) \rightarrow \dots \right\} \right.$$

✓ **Maple** : cpu = 0.419 (sec), leaf count = 68

$$\left\{ \int^{y(x)} \frac{1}{-a^{-a} \sqrt{-a^{2a} + C1}} d_{-a-x} - C2 = 0, \int^{y(x)} -\frac{1}{-a^{-a} \sqrt{-a^{2a} + C1}} d_{-a-x} - C2 = 0 \right\}$$

2.1717 ODE No. 1717

$$ay'(x)^2 + by(x)^3 + y(x)y''(x) = 0$$

✓ **Mathematica** : cpu = 1.56299 (sec), leaf count = 290

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{\sqrt{2a+3} \#1^{a+1} \sqrt{\frac{-2b\#1^{2a+3} + 2ac_1 + 3c_1}{(2a+3)c_1}} {}_2F_1\left(\frac{1}{2}, \frac{a+1}{2a+3}; \frac{a+1}{2a+3} + 1; \frac{2b\#1^{2a+3}}{2ac_1 + 3c_1}\right)}{(a+1) \sqrt{-2b\#1^{2a+3} + 2ac_1 + 3c_1}} \right] [c_2] \right\} \right.$$

✓ **Maple** : cpu = 0.468 (sec), leaf count = 108

$$\left\{ \int^{y(x)} (2a+3) \frac{1}{-a^{2a} \sqrt{-(2a+3) \frac{1}{-a^{2a}} (2 \frac{1}{-a^{2a+3b}} - C1)}} d_{-a-x} - C2 = 0, \int^{y(x)} -(2a+3) \frac{1}{-a^{2a}} d_{-a-x} - C2 = 0 \right\}$$

2.1718 ODE No. 1718

$$dy(x)^{1-a} + ay'(x)^2 + by(x)y'(x) + cy(x)^2 + y(x)y''(x) = 0$$

✓ **Mathematica** : cpu = 1.48329 (sec), leaf count = 744

$$\left\{ \left\{ y(x) \rightarrow \left(-\frac{ad \exp\left(\frac{1}{2}x(\sqrt{-4ac+b^2-4c}+b) - \frac{x(b\sqrt{-4ac+b^2-4c}-4(a+1)c+b^2)}{\sqrt{-4ac+b^2-4c+b}} - \frac{2(a+1)cx}{\sqrt{-4ac+b^2-4c+b}}\right)}{(a+1)c} \right) \right. \right.$$

✓ **Maple** : cpu = 0.258 (sec), leaf count = 145

$$\left\{ y(x) = e^{-\frac{x}{2a+2}\sqrt{-4ac+b^2-4c}} e^{-\frac{bx}{2a+2}} \left(c^2(-4ac+b^2-4c) \left(e^{x\sqrt{-4ac+b^2-4c}} - C1 ac + de^{\frac{x}{2}(b+\sqrt{-4ac+b^2-4c})} \sqrt{-4ac+b^2-4c} \right) \right) \right.$$

2.1719 ODE No. 1719

$$ay'(x)^2 + f(x)y(x)y'(x) + g(x)y(x)^2 + y(x)y''(x) = 0$$

✗ **Mathematica** : cpu = 41.968 (sec), leaf count = 0 , could not solve

DSolve[g[x]*y[x]^2 + f[x]*y[x]*Derivative[1][y][x] + a*Derivative[1][y][x]^2 + y[x]*Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.524 (sec), leaf count = 70

$$\left\{ y(x) = ODESolStruc \left(e^{\int -b(-a) d_{-a} - C1}, \left[\left\{ \frac{d}{d_{-a}} b(-a) = (-a-1)(-b(-a))^2 - f(-a)_b(-a) - g(-a) \right. \right. \right.$$

2.1720 ODE No. 1720

$$ay'(x)^2 + by(x)^2y'(x) + cy(x)^4 + y(x)y''(x) = 0$$

✗ **Mathematica** : cpu = 93.1708 (sec), leaf count = 0 , could not solve

DSolve[c*y[x]^4 + b*y[x]^2*Derivative[1][y][x] + a*Derivative[1][y][x]^2 + y[x]*Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.514 (sec), leaf count = 174

$$\left\{ \int^{y(x)} (2a+4) \left(\tan \left(\text{RootOf} \left(2_Z b_a^2 - 2a \ln(-a) \sqrt{-a^4(4ac-b^2+8c)} - \ln \left(\frac{-a^4(4ac(\tan(-2))}{\dots} \right) \right) \right. \right.$$

2.1721 ODE No. 1721

$$-\frac{ay(x)^3 f'(x)}{a+2} + \frac{af(x)^2 y(x)^4}{(a+2)^2} - \frac{(a-1)y'(x)^2}{a} - f(x)y(x)^2 y'(x) + y(x)y''(x) = 0$$

✗ **Mathematica** : cpu = 0.95009 (sec), leaf count = 0 , could not solve

DSolve[(a*f[x]^2*y[x]^4)/(2+a)^2 - (a*y[x]^3*Derivative[1][f][x])/(2+a) - f[x]*y[x]^2*Derivative[1][y][x] + (a-1)*Derivative[1][y][x]^2/a + y[x]*Derivative[2][y][x] == 0, y[x], x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(diff(diff(y(x),x),x)*y(x)-(a-1)/a*diff(y(x),x)^2-f(x)*y(x)^2*diff(y(x),x)+a/(a+2)*diff(f(x),x)*y(x)^3=0,y(x))

2.1722 ODE No. 1722

$$-2ay(x)(y'(x)^2 + 1)^{3/2} + y(x)y''(x) - y'(x)^2 - 1 = 0$$

✓ **Mathematica** : cpu = 1.94823 (sec), leaf count = 797

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{\left((4c_1a^2 + \sqrt{8c_1a^2 + 1} + 1) E\left(i \sinh^{-1} \left(\sqrt{2} \sqrt{\frac{a^2}{-4c_1a^2 + \sqrt{8c_1a^2 + 1} - 1}} \right) \right) \right) \#1}{4c_1a^2} \right] \right\} \right\}$$

✓ **Maple** : cpu = 0.854 (sec), leaf count = 98

$$\left\{ \int^{y(x)} (a_a^2 + _C1) \frac{1}{\sqrt{-_a^4a^2 - 2_C1_a^2a - _C1^2 + _a^2}} d_a - x - _C2 = 0, \int^{y(x)} -(a_a^2 + _C1) \frac{1}{\sqrt{-_a^4a^2 - 2_C1_a^2a - _C1^2 + _a^2}} d_a - x - _C2 = 0 \right\}$$

2.1723 ODE No. 1723

$$(y(x) + x)y''(x) + y'(x)^2 - y'(x) = 0$$

✓ **Mathematica** : cpu = 0.845534 (sec), leaf count = 259

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(-\sqrt{2}e^{-2c_1} \sqrt{4e^{3c_1}x + e^{2c_1} - 4e^{3c_1}c_2} + e^{-c_1} - 4c_2 + 2x \right) \right\}, \left\{ y(x) \rightarrow \frac{1}{2} \left(\sqrt{2}e^{-2c_1} \sqrt{4e^{3c_1}x + e^{2c_1} - 4e^{3c_1}c_2} + e^{-c_1} - 4c_2 + 2x \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.344 (sec), leaf count = 16

$$\left\{ y(x) = \sqrt{-C1 + 2x_C2 + _C1 + x} \right\}$$

2.1724 ODE No. 1724

$$(x - y(x))y''(x) + 2y'(x)(y'(x) + 1) = 0$$

✓ **Mathematica** : cpu = 0.21896 (sec), leaf count = 38

$$\left\{ \left\{ y(x) \rightarrow -\frac{e^{-c_1}(e^{c_1}c_2x + e^{c_1}c_2^2 + 1)}{c_2 + x} \right\} \right\}$$

✓ **Maple** : cpu = 0.748 (sec), leaf count = 21

$$\left\{ y(x) = \frac{-C2^2 - _C2 x + _C1}{_C2 - x} \right\}$$

2.1725 ODE No. 1725

$$(x - y(x))y''(x) - (y'(x) + 1)(y'(x)^2 + 1) = 0$$

✓ **Mathematica** : cpu = 0.341964 (sec), leaf count = 75

$$\left\{ \left\{ y(x) \rightarrow -\sqrt{-2c_2x + e^{2c_1} - c_2^2 - x^2 - c_2} \right\}, \left\{ y(x) \rightarrow \sqrt{-2c_2x + e^{2c_1} - c_2^2 - x^2 - c_2} \right\} \right\}$$

✓ **Maple** : cpu = 0.722 (sec), leaf count = 105

$$\left\{ y(x) = x + \text{RootOf} \left(-x + \int^{-Z} (-C1^2 - f^2 - 1) \left(2 - C1^2 - f^2 + C1 \sqrt{-C1^2 - f^2 + 2f} \right)^{-1} d_f + \right. \right.$$

2.1726 ODE No. 1726

$$(x - y(x))y''(x) - h(y'(x)) = 0$$

✓ **Mathematica** : cpu = 0.712943 (sec), leaf count = 75

$$\text{Solve} \left[\left\{ x = \int \frac{\exp \left(- \int_1^{K\$1118005} \frac{K[3]-1}{h(K[3])} dK[3] - c_1 \right)}{h(K\$1118005)} dK\$1118005 + c_2, y(x) = x - \exp \left(- \int_1^{K\$1118005} \frac{K}{h} \right. \right. \right.$$

✓ **Maple** : cpu = 0.096 (sec), leaf count = 39

$$\left\{ y(x) = x + \text{RootOf} \left(-x + \int^{-Z} \left(-1 + \text{RootOf} \left(\int^{-Z} \frac{a-1}{h(-a)} d_a + \ln(-g) + C1 \right) \right)^{-1} d_g + C2 \right. \right.$$

2.1727 ODE No. 1727

$$2y(x)y''(x) + y'(x)^2 + 1 = 0$$

✓ **Mathematica** : cpu = 0.175117 (sec), leaf count = 129

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[e^{2c_1} \tan^{-1} \left(\frac{\sqrt{\#1}}{\sqrt{e^{2c_1} - \#1}} \right) - \sqrt{\#1} \sqrt{e^{2c_1} - \#1} \right] [c_2 + x] \right\}, \left\{ y(x) \rightarrow \text{Invers} \right. \right.$$

✓ **Maple** : cpu = 0.438 (sec), leaf count = 95

$$\left\{ -\sqrt{-C1 y(x) - (y(x))^2} + \frac{-C1}{2} \arctan \left(1 \left(y(x) - \frac{-C1}{2} \right) \frac{1}{\sqrt{-C1 y(x) - (y(x))^2}} \right) - x - C2 = 0, \right.$$

2.1728 ODE No. 1728

$$a + 2y(x)y''(x) - y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.00633472 (sec), leaf count = 31

$$\left\{ \left\{ y(x) \rightarrow \frac{x^2(c_1^2 - a)}{4c_2} + c_1x + c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.279 (sec), leaf count = 24

$$\left\{ y(x) = \frac{(-C1^2 - a)x^2}{4C2} + C1x + C2 \right\}$$

2.1729 ODE No. 1729

$$a + f(x)y(x)^2 + 2y(x)y''(x) - y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 0.0229822 (sec), leaf count = 0 , could not solve

`DSolve[a + f[x]*y[x]^2 - Derivative[1][y][x]^2 + 2*y[x]*Derivative[2][y][x] == 0, y[x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(2*diff(diff(y(x),x),x)*y(x)-diff(y(x),x)^2+f(x)*y(x)^2+a=0,y(x))`

2.1730 ODE No. 1730

$$2y(x)y''(x) - y'(x)^2 - 8y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.466281 (sec), leaf count = 127

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{2}i\sqrt{c_1}\operatorname{ns}\left(\frac{1}{2}\left(-(-1)^{3/4}\sqrt{2}\sqrt[4]{c_1}x - (-1)^{3/4}\sqrt{2}\sqrt[4]{c_1}c_2\right)\middle| - 1\right)^2 \right\}, \left\{ y(x) \rightarrow -\frac{1}{2}i\sqrt{c_1}\operatorname{ns}\left(\frac{1}{2}\left(-(-1)^{3/4}\sqrt{2}\sqrt[4]{c_1}x - (-1)^{3/4}\sqrt{2}\sqrt[4]{c_1}c_2\right)\middle| - 1\right)^2 \right\} \right.$$

✓ **Maple** : cpu = 0.331 (sec), leaf count = 53

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{4a^3 + C1a}} da - x - C2 = 0, \int^{y(x)} -\frac{1}{\sqrt{4a^3 + C1a}} da - x - C2 = 0 \right\}$$

2.1731 ODE No. 1731

$$2y(x)y''(x) - y'(x)^2 - 8y(x)^3 - 4y(x)^2 = 0$$

✓ **Mathematica** : cpu = 1.39593 (sec), leaf count = 359

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\frac{2i\sqrt{c_1} \sqrt{\frac{c_1}{\sqrt{1-2\sqrt{1-c_1}}} + 1} + 1 \sqrt{\frac{c_1}{\sqrt{1-2\sqrt{1-c_1}+2}} + 1} + 1 F \left(i \sinh^{-1} \left(\frac{\sqrt{\frac{c_1}{2\sqrt{1-c_1}+2}}}{\sqrt{\sqrt{1-c_1}}} \right) \right) \sqrt{\frac{c_1}{2\sqrt{1-c_1}+2}}}{\sqrt{4\sqrt{1-c_1}+2} \sqrt{4\sqrt{1-c_1}+2} + c_1} \right] \right. \right.$$

✓ **Maple** : cpu = 0.345 (sec), leaf count = 63

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{4a^3 + aC1 + 4a^2}} da - x - C2 = 0, \int^{y(x)} -\frac{1}{\sqrt{4a^3 + aC1 + 4a^2}} da - x - C2 = 0 \right\}$$

2.1732 ODE No. 1732

$$2y(x)y''(x) - y'(x)^2 - 4(2y(x) + x)y(x)^2 = 0$$

✗ **Mathematica** : cpu = 1.43341 (sec), leaf count = 0 , could not solve

`DSolve[-4*y[x]^2*(x + 2*y[x]) - Derivative[1][y][x]^2 + 2*y[x]*Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(2*diff(diff(y(x), x), x)*y(x)-diff(y(x), x)^2-4*(x+2*y(x))*y(x)^2=0, y(x))`

2.1733 ODE No. 1733

$$y(x)^2(ay(x) + b) + 2y(x)y''(x) - y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 2.50759 (sec), leaf count = 437

$$\left\{ \left\{ \begin{array}{l} y(x) \rightarrow \text{InverseFunction} \left[\frac{i\sqrt{2}\#1^{3/2} \sqrt{\frac{4c_1}{\#1(\sqrt{2ac_1+b^2-b})} + 2} \sqrt{1 - \frac{2c_1}{\#1(\sqrt{2ac_1+b^2+b})}} F \left(i \sinh^{-1} \left(\frac{\sqrt{2} \sqrt{\frac{b^2}{\sqrt{2ac_1+b^2-b}}}}{\sqrt{2ac_1+b^2-b}} \right)}{\sqrt{\frac{c_1}{\sqrt{2ac_1+b^2-b}}}} \sqrt{-\#1(\#1^2 a + 2\#1 b - 2c_1)} \right)} \right. \end{array} \right.$$

✓ **Maple** : cpu = 0.342 (sec), leaf count = 71

$$\left\{ \int^{y(x)} -2 \frac{1}{\sqrt{-2 a a^3 - 4 b a^2 + 4 a C1}} d a - x - C2 = 0, \int^{y(x)} 2 \frac{1}{\sqrt{-2 a a^3 - 4 b a^2 + 4 a C1}} d a - x - C2 = 0 \right.$$

2.1734 ODE No. 1734

$$ay(x)^3 + 2y(x)y''(x) - y'(x)^2 + 2xy(x)^2 + 1 = 0$$

✗ **Mathematica** : cpu = 1.50302 (sec), leaf count = 0 , could not solve

`DSolve[1 + 2*x*y[x]^2 + a*y[x]^3 - Derivative[1][y][x]^2 + 2*y[x]*Derivative[2][y][x] == 0, y[x]]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(2*dif(dif(y(x),x),x)*y(x)-dif(y(x),x)^2+1+2*x*y(x)^2+a*y(x)^3=0,y(x))`

2.1735 ODE No. 1735

$$y(x)^2(ay(x) + bx) + 2y(x)y''(x) - y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 1.18734 (sec), leaf count = 0 , could not solve

`DSolve[y[x]^2*(b*x + a*y[x]) - Derivative[1][y][x]^2 + 2*y[x]*Derivative[2][y][x] == 0, y[x]]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(2*dif(dif(y(x),x),x)*y(x)-dif(y(x),x)^2+(a*y(x)+b*x)*y(x)^2=0,y(x))`

2.1736 ODE No. 1736

$$2y(x)y''(x) - y'(x)^2 - 3y(x)^4 = 0$$

✓ **Mathematica** : cpu = 8.17892 (sec), leaf count = 285

$$\left\{ \left\{ \begin{array}{l} y(x) \rightarrow \text{InverseFunction} \left[\frac{2i\#1^{3/2} \sqrt{(-1)^{5/6} \left(\frac{\sqrt[3]{-c_1}}{\#1} - 1 \right) \sqrt{\frac{(-c_1)^{2/3}}{\#1^2} + \frac{\sqrt[3]{-c_1}}{\#1} + 1}}}{\sqrt[4]{3} \sqrt[3]{-c_1} \sqrt{\#1^3 + c_1}} \left(\sin^{-1} \left(\frac{\sqrt{-\frac{i\sqrt[3]{-c_1}}{\#1}}}{\sqrt[4]{3}} \right) \right) \right. \end{array} \right. \right.$$

✓ **Maple** : cpu = 0.336 (sec), leaf count = 49

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{-a^4 + -a - C1}} d_{-a - x - C2} = 0, \int^{y(x)} -\frac{1}{\sqrt{-a^4 + -a - C1}} d_{-a - x - C2} = 0 \right\}$$

2.1737 ODE No. 1737

$$-4(a + x^2)y(x)^2 + b + 2y(x)y''(x) - y'(x)^2 - 3y(x)^4 - 8xy(x)^3 = 0$$

✗ **Mathematica** : cpu = 1.28798 (sec), leaf count = 0 , could not solve

`DSolve[b - 4*(a + x^2)*y[x]^2 - 8*x*y[x]^3 - 3*y[x]^4 - Derivative[1][y][x]^2 + 2*y[x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(2*dif(dif(y(x),x),x)*y(x)-dif(y(x),x)^2+b-4*(x^2+a)*y(x)^2-8*x*y(x)^3-3*y(x)^4=0,y(x))`

2.1738 ODE No. 1738

$$2y(x)^2 (f'(x) + f(x)^2) + 3f(x)y(x)y'(x) + 2y(x)y''(x) - y'(x)^2 - 8y(x)^3 = 0$$

✗ **Mathematica** : cpu = 0.511808 (sec), leaf count = 0 , could not solve

`DSolve[-8*y[x]^3 + 2*y[x]^2*(f[x]^2 + Derivative[1][f][x]) + 3*f[x]*y[x]*Derivative[1]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(2*dif(dif(y(x),x),x)*y(x)-dif(y(x),x)^2+3*f(x)*y(x)*dif(y(x),x)+2*(f(x)^2+c`
`8*y(x)^3=0,y(x))`

2.1739 ODE No. 1739

$$f(x)y(x)^2 + 2y(x)y''(x) + 4y(x)^2y'(x) - y'(x)^2 + y(x)^4 + 1 = 0$$

✗ **Mathematica** : cpu = 0.0548545 (sec), leaf count = 0 , could not solve

DSolve[1 + f[x]*y[x]^2 + y[x]^4 + 4*y[x]^2*Derivative[1][y][x] - Derivative[1][y][x]^2

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(2*diff(diff(y(x),x),x)*y(x)-diff(y(x),x)^2+4*y(x)^2*diff(y(x),x)+1+f(x)*y(x)^2

2.1740 ODE No. 1740

$$2y(x)y''(x) - 3y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0264176 (sec), leaf count = 16

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2}{(2c_1 + x)^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.298 (sec), leaf count = 13

$$\{y(x) = 4(_C1 x + _C2)^{-2}\}$$

2.1741 ODE No. 1741

$$2y(x)y''(x) - 3y'(x)^2 - 4y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0917708 (sec), leaf count = 17

$$\left\{ \left\{ y(x) \rightarrow c_2 \sec^2(2c_1 + x) \right\} \right\}$$

✓ **Maple** : cpu = 0.337 (sec), leaf count = 37

$$\left\{ y(x) = 4 \left(_C1^2(\sin(x))^2 - _C2^2(\sin(x))^2 - 2_C1_C2 \sin(x) \cos(x) + _C2^2 \right)^{-1} \right\}$$

2.1742 ODE No. 1742

$$f(x)y(x)^2 + 2y(x)y''(x) - 3y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 10.8188 (sec), leaf count = 0 , could not solve

`DSolve[f[x]*y[x]^2 - 3*Derivative[1][y][x]^2 + 2*y[x]*Derivative[2][y][x] == 0, y[x],`

✓ **Maple** : cpu = 0.176 (sec), leaf count = 60

$$\left\{ y(x) = ODESolStruc \left(e^{\int -b(-a) d_a - C1}, \left\{ \frac{d}{d_a} - b(-a) = \frac{(-b(-a))^2}{2} - \frac{f(-a)}{2} \right\}, \left\{ -a = x, -b(-a) = \right. \right. \right.$$

2.1743 ODE No. 1743

$$y(x)^2 (ay(x)^3 + 1) + 2y(x)y''(x) - 6y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 18.0721 (sec), leaf count = 2761

$$\left\{ \text{Solve} \left[\frac{4 \left(F \left(\sin^{-1} \left(\sqrt{\frac{(\text{Root}[4c_1 \#1^4 + 4a \#1^3 + 1 \&, 2] - \text{Root}[4c_1 \#1^4 + 4a \#1^3 + 1 \&, 4]}(y(x) - \text{Root}[4c_1 \#1^4 + 4a \#1^3 + 1 \&, 1])}{(\text{Root}[4c_1 \#1^4 + 4a \#1^3 + 1 \&, 1] - \text{Root}[4c_1 \#1^4 + 4a \#1^3 + 1 \&, 4]}(y(x) - \text{Root}[4c_1 \#1^4 + 4a \#1^3 + 1 \&, 2])} \right)} \right)} \right]} \right. \right.$$

✓ **Maple** : cpu = 0.364 (sec), leaf count = 71

$$\left\{ \int^{y(x)} -2 \frac{1}{\sqrt{4 - C1 - a^4 + 4a - a^3 + 1 - a}} d_a - x - C2 = 0, \int^{y(x)} 2 \frac{1}{\sqrt{4 - C1 - a^4 + 4a - a^3 + 1 - a}} d_a \right.$$

2.1744 ODE No. 1744

$$2y(x)y''(x) - y'(x)^2 (y'(x)^2 + 1) = 0$$

✓ **Mathematica** : cpu = 0.952136 (sec), leaf count = 173

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-ie^{-c_1} \left(\sqrt{\#1} \sqrt{\#1 e^{2c_1} - 1} - e^{-c_1} \log \left(\sqrt{\#1} e^{2c_1} + e^{c_1} \sqrt{\#1 e^{2c_1} - 1} \right) \right) \& \right] [c_2 \right. \right.$$

✓ **Maple** : cpu = 0.46 (sec), leaf count = 95

$$\left\{ -\frac{C1}{2} \arctan \left(1 \left(y(x) - \frac{C1}{2} \right) \frac{1}{\sqrt{-C1 y(x) - (y(x))^2}} \right) - \sqrt{-C1 y(x) - (y(x))^2} - x - C2 = 0, \right.$$

2.1745 ODE No. 1745

$$2(y(x) - a)y''(x) + y'(x)^2 + 1 = 0$$

✓ **Mathematica** : cpu = 0.298866 (sec), leaf count = 204

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\sqrt{2} \left(\frac{1}{2} \sqrt{a - \#1} \sqrt{e^{2c_1} - 2(a - \#1)} - \frac{e^{2c_1} \tan^{-1} \left(\frac{\sqrt{2}\sqrt{a - \#1}}{\sqrt{e^{2c_1} - 2(a - \#1)}} \right)}{2\sqrt{2}} \right) \right] \& \right\} \right\} [c$$

✓ **Maple** : cpu = 0.622 (sec), leaf count = 293

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

2.1746 ODE No. 1746

$$-ax^2 - bx - c + 3y(x)y''(x) - 2y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 0.0400646 (sec), leaf count = 0 , could not solve

`DSolve[-c - b*x - a*x^2 - 2*Derivative[1][y][x]^2 + 3*y[x]*Derivative[2][y][x] == 0, y`

✓ **Maple** : cpu = 0.742 (sec), leaf count = 207

$$\left\{ y(x) = \text{RootOf} \left(-2 \arctan \left(\frac{2ax + b}{\sqrt{4ac - b^2}} \right) b - 2 \int^{-z} \frac{b}{\sqrt{4_f^{4/3} _C1 b^2 - 36c_f^2 a + 9b^2 _f^2 - 2}} d_f \sqrt{\dots} \right) \right\}$$

2.1747 ODE No. 1747

$$3y(x)y''(x) - 5y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.027407 (sec), leaf count = 20

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2}{(3c_1 + 2x)^{3/2}} \right\} \right\}$$

✓ **Maple** : cpu = 0.284 (sec), leaf count = 17

$$\left\{ -\frac{3}{2}(y(x))^{-\frac{2}{3}} - _C1 x - _C2 = 0 \right\}$$

2.1748 ODE No. 1748

$$4y(x)y''(x) - 3y'(x)^2 + 4y(x) = 0$$

✓ **Mathematica** : cpu = 0.094163 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow \frac{(c_1^2 x^2 + 2c_2 c_1^2 x + c_2^2 c_1^2 - 64)^2}{256 c_1^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.405 (sec), leaf count = 67

$$\left\{ -4 \frac{\sqrt{-C1 (y(x))^{3/2} + 4 y(x)}}{\sqrt{y(x)} C1} - x - C2 = 0, 4 \frac{\sqrt{-C1 (y(x))^{3/2} + 4 y(x)}}{\sqrt{y(x)} C1} - x - C2 = 0, y(x) = 0 \right\}$$

2.1749 ODE No. 1749

$$4y(x)y''(x) - 3y'(x)^2 - 12y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.534798 (sec), leaf count = 181

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{4 \sqrt{\frac{4 \#1^{3/2}}{c_1} + 1} \sqrt{\#1^{3/2} c_1 + 4 \#1^3} {}_2F_1 \left(\frac{1}{6}, \frac{1}{2}, \frac{7}{6}; -\frac{4 \#1^{3/2}}{c_1} \right)}{4 \#1^2 + \sqrt{\#1} c_1} \right] \& [c_2 + x] \right\}, \left\{ y(x) \right\} \right\}$$

✓ **Maple** : cpu = 0.558 (sec), leaf count = 57

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{-C1 - a^{\frac{3}{2}} + 4 - a^3}} d_a - x - C2 = 0, \int^{y(x)} -\frac{1}{\sqrt{-C1 - a^{\frac{3}{2}} + 4 - a^3}} d_a - x - C2 = 0 \right\}$$

2.1750 ODE No. 1750

$$ay(x)^3 + by(x)^2 + cy(x) + 4y(x)y''(x) - 3y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 3.80381 (sec), leaf count = 2281

$$\left\{ \text{Solve} \left[\frac{4F \left(\sin^{-1} \left(\sqrt{\frac{(\text{Root}[a \#1^4 + 3b \#1^2 - 3c_1 \#1 - 3c \&, 2] - \text{Root}[a \#1^4 + 3b \#1^2 - 3c_1 \#1 - 3c \&, 4]) (\sqrt{y(x)} - \text{Root}[a \#1^4 + 3b \#1^2 - 3c_1 \#1 - 3c \&, 1])}{(\text{Root}[a \#1^4 + 3b \#1^2 - 3c_1 \#1 - 3c \&, 1] - \text{Root}[a \#1^4 + 3b \#1^2 - 3c_1 \#1 - 3c \&, 4]) (\sqrt{y(x)} - \text{Root}[a \#1^4 + 3b \#1^2 - 3c_1 \#1 - 3c \&, 1])} \right)} \right)} \right]$$

✓ **Maple** : cpu = 0.508 (sec), leaf count = 87

$$\left\{ \int^{y(x)} -3 \frac{1}{\sqrt{9 - C1 - a^{3/2} - 3a - a^3 - 9b - a^2 + 9c - a}} d_a - x - C2 = 0, \int^{y(x)} 3 \frac{1}{\sqrt{9 - C1 - a^{3/2} - 3a - a^3 - 9b - a^2 + 9c - a}} d_a - x - C2 = 0 \right\}$$

2.1751 ODE No. 1751

$$y'(x) \left(6y(x)^2 - \frac{2y(x)f'(x)}{f(x)} \right) + f(x)y(x) + g(x)y(x)^2 + 4y(x)y''(x) - 2y(x)^2y'(x) - 3y'(x)^2 + y(x)^4 = 0$$

✗ **Mathematica** : cpu = 0.696612 (sec), leaf count = 0 , could not solve

`DSolve[f[x]*y[x] + g[x]*y[x]^2 + y[x]^4 - 2*y[x]^2*Derivative[1][y][x] + (6*y[x]^2 -`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(4*diff(diff(y(x),x),x)*y(x)-3*diff(y(x),x)^2+(6*y(x)^2-2*diff(f(x),x)*y(x)/f(x))`
`2*y(x)^2*diff(y(x),x)+g(x)*y(x)^2+f(x)*y(x)=0,y(x))`

2.1752 ODE No. 1752

$$ay(x)^2 + 4y(x)y''(x) - 5y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.125465 (sec), leaf count = 26

$$\left\{ \left\{ y(x) \rightarrow c_2 \operatorname{sech}^4 \left(\frac{1}{4} \sqrt{a} (x - 4c_1) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.359 (sec), leaf count = 33

$$\left\{ y(x) = 16 \frac{(e^{1/4 \sqrt{a} x})^4 a^2}{(e^{1/2 \sqrt{a} x} C1 - C2)^4} \right\}$$

2.1753 ODE No. 1753

$$12y(x)y''(x) - 15y'(x)^2 + 8y(x)^3 = 0$$

✓ **Mathematica** : cpu = 0.315517 (sec), leaf count = 43

$$\left\{ \left\{ y(x) \rightarrow \frac{2304c_1^2}{(3c_1^2x^2 + 6c_2c_1^2x + 3c_2^2c_1 + 128)^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.385 (sec), leaf count = 147

$$\left\{ -12 \frac{y(x) \left(8 \sqrt{y(x)} - C1 \right) \sqrt{8y(x) - C1} \sqrt{y(x)}}{\sqrt{-24 (y(x))^3 + 3 C1 (y(x))^{5/2} - C1} \sqrt{\sqrt{y(x)} \left(8 \sqrt{y(x)} - C1 \right)}} - x - C2 = 0, 12 \frac{\dots}{\sqrt{-24 (y(x))^3 + 3 C1 (y(x))^{5/2} - C1} \sqrt{\sqrt{y(x)} \left(8 \sqrt{y(x)} - C1 \right)}} \right\}$$

2.1754 ODE No. 1754

$$ny(x)y''(x) - (n - 1)y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0339065 (sec), leaf count = 17

$$\{ \{ y(x) \rightarrow c_2(x - c_1n)^n \} \}$$

✓ **Maple** : cpu = 0.308 (sec), leaf count = 15

$$\left\{ y(x) = \left(\frac{-C1 x + C2}{n} \right)^n \right\}$$

2.1755 ODE No. 1755

$$ay(x)y''(x) + by'(x)^2 + c0 + c1y(x) + c2y(x)^2 + c3y(x)^3 + c4y(x)^4 = 0$$

✗ **Mathematica** : cpu = 103.961 (sec), leaf count = 0 , could not solve

`DSolve[c0 + c1*y[x] + c2*y[x]^2 + c3*y[x]^3 + c4*y[x]^4 + b*Derivative[1][y][x]^2 + a`

✓ **Maple** : cpu = 0.581 (sec), leaf count = 1028

$$\left\{ \int^{y(x)} b(6a^4 + 25a^3b + 35a^2b^2 + 20ab^3 + 4b^4) - a^2 \frac{b}{a} \frac{\dots}{\sqrt{-a^2 \frac{b}{a} b(6a^4 + 25a^3b + 35a^2b^2 + 20ab^3 + 4b^4)}} \right\}$$

2.1756 ODE No. 1756

$$ay(x)y''(x) + by'(x)^2 - \frac{y(x)y'(x)}{\sqrt{c^2 + x^2}} = 0$$

✓ **Mathematica** : cpu = 0.284845 (sec), leaf count = 111

$$\left\{ \left\{ y(x) \rightarrow c_2 \left(-a^2 \left(x \left(\sqrt{c^2 + x^2} + x \right)^{\frac{1}{a}} + c_1 \right) + a \left(\sqrt{c^2 + x^2} + x \right)^{\frac{1}{a}} \left(\sqrt{c^2 + x^2} - bx \right) + b\sqrt{c^2 + x^2} \left(\sqrt{c^2 + x^2} \right)^{\frac{1}{a}} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.659 (sec), leaf count = 79

$$\left\{ y(x) = \left(\left(\frac{a}{a+b} \left(-C1 \sqrt[2]{2} x^{a^{-1}+1} {}_2F_1 \left(-\frac{1}{2a}, -\frac{1}{2a} - \frac{1}{2}; 1 - a^{-1}; -\frac{c^2}{x^2} \right) (-a^{-1} - 1)^{-1} + C2 \right)^{-1} \right)^{\frac{a}{a+b}} \right)$$

2.1757 ODE No. 1757

$$(a + 2)f(x)y(x)^2y'(x) + ay(x)y''(x) + ay(x)^3y'(x) - (a - 1)y'(x)^2 + f(x)^2y(x)^4 = 0$$

✗ **Mathematica** : cpu = 0.87754 (sec), leaf count = 0 , could not solve

`DSolve[f[x]^2*y[x]^4 + (2 + a)*f[x]*y[x]^2*Derivative[1][y][x] + a*y[x]^3*Derivative[1][y][x] + (1 + a)*Derivative[1][y][x]^2 + a*y[x]*Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(a*y(x)*diff(diff(y(x), x), x) - (a-1)*diff(y(x), x)^2 + (a+2)*f(x)*y(x)^2*diff(y(x), x) + f(x)^2*y(x)^4 = 0, y(x), x)`

2.1758 ODE No. 1758

$$y''(x)(ay(x) + b) + cy'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0644045 (sec), leaf count = 36

$$\left\{ \left\{ y(x) \rightarrow \frac{(c_1(-(a+c))(-c_2-x))^{\frac{a}{a+c}} - b}{a} \right\} \right\}$$

✓ **Maple** : cpu = 0.328 (sec), leaf count = 88

$$\left\{ y(x) = -\frac{1}{a} \left(-C1 ax - C1 xc + b \left(\left(\frac{1}{(c+a)(-C1 x - C2)} \right)^{\frac{c}{a}(1+\frac{c}{a})^{-1}} - C2 a - C2 c \right) \right) \right\}$$

2.1759 ODE No. 1759

$$xy(x)y''(x) + xy'(x)^2 - y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0356712 (sec), leaf count = 18

$$\left\{ \left\{ y(x) \rightarrow c_2 \sqrt{c_1 + x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.299 (sec), leaf count = 31

$$\left\{ y(x) = \sqrt{-C1 x^2 + 2 - C2}, y(x) = -\sqrt{-C1 x^2 + 2 - C2} \right\}$$

2.1760 ODE No. 1760

$$ay(x)y'(x) + f(x) + xy(x)y''(x) + xy'(x)^2 = 0$$

✗ **Mathematica** : cpu = 300.042 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.065 (sec), leaf count = 114

$$\left\{ y(x) = \frac{\sqrt{2}}{a-1} \sqrt{(a-1) \left(x^{1-a} \int \frac{x^a f(x)}{x} dx + x^{1-a} C1 - \int f(x) dx - C2 \right)}, y(x) = -\frac{\sqrt{2}}{a-1} \sqrt{(a-1) \left(x^{1-a} \int \frac{x^a f(x)}{x} dx + x^{1-a} C1 - \int f(x) dx - C2 \right)} \right\}$$

2.1761 ODE No. 1761

$$x(ay(x)^4 + d) + y(x) (by(x)^2 + c) + xy(x)y''(x) - xy'(x)^2 + y(x)y'(x) = 0$$

✗ **Mathematica** : cpu = 1.69015 (sec), leaf count = 0 , could not solve

`DSolve[y[x]*(c + b*y[x]^2) + x*(d + a*y[x]^4) + y[x]*Derivative[1][y][x] - x*Derivative[1][y][x]^2 + y[x]*Derivative[1][y][x] = 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(x*y(x)*diff(diff(y(x),x),x)-x*diff(y(x),x)^2+y(x)*diff(y(x),x)+x*(d+a*y(x)^4)+y(x)*diff(y(x),x)=0,y(x),x)`

2.1762 ODE No. 1762

$$ay(x)y'(x) + bxy(x)^3 + xy(x)y''(x) - xy'(x)^2 = 0$$

✗ **Mathematica** : cpu = 53.0015 (sec), leaf count = 0 , could not solve

DSolve[b*x*y[x]^3 + a*y[x]*Derivative[1][y][x] - x*Derivative[1][y][x]^2 + x*y[x]*Derivative[2][y][x], x]

✓ **Maple** : cpu = 1.078 (sec), leaf count = 106

$$\left\{ y(x) = \text{ODESolStruc} \left(\frac{-a}{(e^{f_{-b(-a)d_{-a}+C1}})^2}, \left[\left\{ \frac{d}{d_{-a}} b(-a) = -a(-ab - 2a + 2)(-b(-a))^3 + (a - 1) \right\} \right] \right) \right\}$$

2.1763 ODE No. 1763

$$ay(x)y'(x) + xy(x)y''(x) + 2xy'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.139138 (sec), leaf count = 35

$$\left\{ \left\{ y(x) \rightarrow c_2 \exp \left(\frac{1}{3} (\log(3x - (a - 1)c_1x^a) - a \log(x)) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.328 (sec), leaf count = 234

$$\left\{ y(x) = \frac{1}{(a - 1)x^a} \sqrt[3]{(3_{-C2}x^a - 3_{-C2}x^a - 3_{-C1}x)(a - 1)^2(x^a)^2}, y(x) = -\frac{1}{(2a - 2)x^a} \sqrt[3]{(3_{-C2}x^a - 3_{-C2}x^a - 3_{-C1}x)(a - 1)^2(x^a)^2} \right\}$$

2.1764 ODE No. 1764

$$xy(x)y''(x) - 2xy'(x)^2 + (y(x) + 1)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0623444 (sec), leaf count = 52

$$\left\{ \left\{ y(x) \rightarrow \frac{\tan \left(\frac{1}{2} (\sqrt{2}\sqrt{c_1} \log(x) - \sqrt{2}\sqrt{c_1}c_2) \right)}{\sqrt{2}\sqrt{c_1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.447 (sec), leaf count = 18

$$\left\{ y(x) = -C1 \tanh \left(\frac{\ln(x) - C2}{2_{-C1}} \right) \right\}$$

2.1765 ODE No. 1765

$$ay(x)y'(x) + xy(x)y''(x) - 2xy'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.125366 (sec), leaf count = 24

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 x^a}{(a-1)c_1 x^a + x} \right\} \right\}$$

✓ **Maple** : cpu = 0.306 (sec), leaf count = 31

$$\left\{ y(x) = -\frac{(a-1)x^a}{-C2 x^a - C2 x^a - C1 x} \right\}$$

2.1766 ODE No. 1766

$$xy(x)y''(x) - 4xy'(x)^2 + 4y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.045495 (sec), leaf count = 21

$$\left\{ \left\{ y(x) \rightarrow \frac{c_2 x}{\sqrt[3]{c_1 x^3 + 1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.308 (sec), leaf count = 84

$$\left\{ y(x) = \left(-\frac{1}{2} \frac{1}{\sqrt[3]{-3-C2 x^3 + C1}} - \frac{i\sqrt{3}}{2} \frac{1}{\sqrt[3]{-3-C2 x^3 + C1}} \right) x, y(x) = \left(-\frac{1}{2} \frac{1}{\sqrt[3]{-3-C2 x^3 + C1}} \right) x \right\}$$

2.1767 ODE No. 1767

$$\left(\frac{ax}{\sqrt{b^2 - x^2}} - x \right) y'(x)^2 + xy(x)y''(x) - y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0745265 (sec), leaf count = 55

$$\left\{ \left\{ y(x) \rightarrow c_2 \exp \left(\frac{c_1 \log(a\sqrt{b^2 - x^2} - c_1)}{a^2} + \frac{\sqrt{b^2 - x^2}}{a} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.847 (sec), leaf count = 50

$$\left\{ y(x) = -C2 e^{\int -x\sqrt{b^2-x^2}(ab^2-ax^2+C1\sqrt{b^2-x^2})^{-1} dx} \right\}$$

2.1768 ODE No. 1768

$$x(y(x) + x)y''(x) + xy'(x)^2 + (x - y(x))y'(x) - y(x) = 0$$

✓ **Mathematica** : cpu = 0.113529 (sec), leaf count = 87

$$\left\{ \left\{ y(x) \rightarrow -x - \sqrt{-e^{2c_2}x^2 - 2ic_1x^2 + e^{2c_2} + x^2} \right\}, \left\{ y(x) \rightarrow -x + \sqrt{-e^{2c_2}x^2 - 2ic_1x^2 + e^{2c_2} + x^2} \right\} \right\}$$

✓ **Maple** : cpu = 0.328 (sec), leaf count = 43

$$\left\{ y(x) = -x - \sqrt{-C1 x^2 + x^2 + C2}, y(x) = -x + \sqrt{-C1 x^2 + x^2 + C2} \right\}$$

2.1769 ODE No. 1769

$$2xy(x)y''(x) - xy'(x)^2 + y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.0449059 (sec), leaf count = 18

$$\left\{ \left\{ y(x) \rightarrow c_2(c_1 + \sqrt{x})^2 \right\} \right\}$$

✓ **Maple** : cpu = 0.314 (sec), leaf count = 21

$$\left\{ y(x) = C1 \sqrt{x} C2 + C1^2 x + \frac{C2^2}{4} \right\}$$

2.1770 ODE No. 1770

$$x^2(y(x) - 1)y''(x) - 2x^2y'(x)^2 - 2x(y(x) - 1)y'(x) - 2(y(x) - 1)^2y(x) = 0$$

✓ **Mathematica** : cpu = 0.7543 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{x^2 \left(-\frac{c_1}{x} + c_2 - \frac{1}{x^2} \right) + 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.365 (sec), leaf count = 26

$$\left\{ y(x) = \frac{x(-C1 x - C2)}{-C1 x^2 - C2 x - 1} \right\}$$

2.1771 ODE No. 1771

$$x^2(y(x) + x)y''(x) - (xy'(x) - y(x))^2 = 0$$

✓ **Mathematica** : cpu = 0.0804174 (sec), leaf count = 21

$$\left\{ \left\{ y(x) \rightarrow c_2 x e^{\frac{c_1}{x}} - x \right\} \right\}$$

✓ **Maple** : cpu = 0.406 (sec), leaf count = 21

$$\left\{ y(x) = \frac{x e^{-1}}{-C2} e^{-\frac{C1}{x}} - x \right\}$$

2.1772 ODE No. 1772

$$a(xy'(x) - y(x))^2 + x^2(x - y(x))y''(x) = 0$$

✓ **Mathematica** : cpu = 0.904813 (sec), leaf count = 37

$$\left\{ \left\{ y(x) \rightarrow x \left((a-1) \left(\frac{(-1)^{a+1} c_1}{x} - c_2 \right) \right)^{\frac{1}{1-a}} + 1 \right\} \right\}$$

✓ **Maple** : cpu = 0.413 (sec), leaf count = 47

$$\{ -C1 + (ax - x) -C2 - x^a y(x) (x - y(x))^{-a} + x^{a+1} (x - y(x))^{-a} = 0 \}$$

2.1773 ODE No. 1773

$$2x^2y(x)y''(x) + x^2(-(y'(x))^2 + 1) + y(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.182512 (sec), leaf count = 44

$$\left\{ \left\{ y(x) \rightarrow \frac{x(c_1^2 \log^2(x) - 2c_2 c_1^2 \log(x) + c_2^2 c_1^2 + 4)}{4c_1} \right\} \right\}$$

✓ **Maple** : cpu = 0.317 (sec), leaf count = 28

$$\left\{ y(x) = \frac{(-C1^2 + 1)x}{4 - C2} + -C1 x \ln(x) + -C2 x (\ln(x))^2 \right\}$$

2.1774 ODE No. 1774

$$ax^2y(x)y''(x) + bx^2y'(x)^2 + cxy(x)y'(x) + dy(x)^2 = 0$$

✓ **Mathematica** : cpu = 1.31436 (sec), leaf count = 93

$$\left\{ \left\{ y(x) \rightarrow c_2 \exp \left(-\frac{\log(x) \left(a \sqrt{\frac{a^2 - 2ac - 4ad - 4bd + c^2}{a^2}} - a + c \right) - 2a \log \left(x \sqrt{\frac{a^2 - 2ac - 4ad - 4bd + c^2}{a^2}} + c_1 \right)}{2(a + b)} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.508 (sec), leaf count = 155

$$\left\{ y(x) = x^{-\frac{1}{2a+2b} \sqrt{a^2 - 2ac - 4ad - 4bd + c^2}} x^{\frac{a}{2a+2b}} x^{-\frac{c}{2a+2b}} \left((a^2 - 2ac - 4ad - 4bd + c^2) \left(x^{\frac{1}{a} \sqrt{a^2 - 2ac - 4ad - 4bd + c^2}} \right) \right) \right\}$$

2.1775 ODE No. 1775

$$-a(x + 2)y(x)^2 + x(x + 1)^2y(x)y''(x) - x(x + 1)^2y'(x)^2 + 2(x + 1)^2y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 0.131396 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow c_2 e^{\frac{-a-c_1}{x} + a \log(x+1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.369 (sec), leaf count = 31

$$\left\{ y(x) = \frac{(1+x)^a}{-C2 e^a} e^{\frac{-c_1}{x}} \left(e^{\frac{a}{x}} \right)^{-1} \right\}$$

2.1776 ODE No. 1776

$$8(1 - x^3)y(x)y''(x) - 4(1 - x^3)y'(x)^2 - 12x^2y(x)y'(x) + 3xy(x)^2 = 0$$

✗ **Mathematica** : cpu = 299.997 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 0.619 (sec), leaf count = 88

$$\left\{ y(x) = \frac{C2^2 x}{4 - C1} \left(LegendreP \left(-\frac{1}{6}, \frac{1}{3}, \sqrt{-(x-1)(x^2+x+1)} \right) \right)^2 + -C1 \left(LegendreQ \left(-\frac{1}{6}, \frac{1}{3}, \sqrt{-(x-1)(x^2+x+1)} \right) \right) \right\}$$

2.1777 ODE No. 1777

$$f_0(x)y(x)y''(x) + f_1(x)y'(x)^2 + f_2(x)y(x)y'(x) + f_3(x)y(x)^2 = 0$$

✗ **Mathematica** : cpu = 48.8355 (sec), leaf count = 0 , could not solve

`DSolve[f3[x]*y[x]^2 + f2[x]*y[x]*Derivative[1][y][x] + f1[x]*Derivative[1][y][x]^2 + f0[x]*y[x]*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.704 (sec), leaf count = 83

$$\left\{ y(x) = \text{ODESolStruc} \left(e^{\int -b(-a) d_a + C_1}, \left[\frac{d}{d_a} b(-a) = -\frac{(f_1(-a) + f_0(-a)) (-b(-a))^2}{f_0(-a)} - \frac{f_2(-a)}{f_0(-a)} \right] \right) \right.$$

2.1778 ODE No. 1778

$$y(x)^2 y''(x) - a = 0$$

✓ **Mathematica** : cpu = 0.522195 (sec), leaf count = 75

$$\text{Solve} \left[\left(\frac{y(x) \sqrt{c_1 - \frac{2a}{y(x)}}}{c_1} + \frac{a \log \left(\sqrt{c_1} y(x) \sqrt{c_1 - \frac{2a}{y(x)}} - a + c_1 y(x) \right)}{c_1^{3/2}} \right)^2 = (c_2 + x)^2, y(x) \right]$$

✓ **Maple** : cpu = 0.653 (sec), leaf count = 369

$$\left\{ y(x) = \frac{-C_1 \left(-C_1^2 a^2 + 2 C_1 a e^{\text{RootOf}(csgn(-C_1^{-1}) - C_1^4 a^2 - 2 Z - C_1^3 a e^{-Z} - csgn(-C_1^{-1})(e^{-Z})^2 - C_1^2 - 2 csgn(-C_1^{-1}) Z)}} \right)}{2 e^{\text{RootOf}(csgn(-C_1^{-1}) - C_1^4 a^2 - 2 Z - C_1^3 a e^{-Z} - csgn(-C_1^{-1})(e^{-Z})^2 - C_1^2 - 2 csgn(-C_1^{-1}) Z)}}} \right.$$

2.1779 ODE No. 1779

$$ax + y(x)^2 y''(x) + y(x) y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 3.88883 (sec), leaf count = 0 , could not solve

`DSolve[a*x + y[x]*Derivative[1][y][x]^2 + y[x]^2*Derivative[2][y][x] == 0, y[x], x]`

✓ **Maple** : cpu = 0.784 (sec), leaf count = 130

$$\left\{ \ln(x) - \int^{\frac{y(x)}{x}} \frac{1}{2\sqrt{3}g^3 + 2\sqrt{3}a} \left(-g^2 \sqrt[3]{\frac{a}{-g^3}} \sqrt{3} + 3g^2 \sqrt[3]{\frac{a}{-g^3}} \tan \left(\text{RootOf} \left(-2Z\sqrt{3} + \ln \left(\frac{1}{3 + 2\sqrt{3}g^3 + 2\sqrt{3}a} \right) \right) \right) \right) dx \right.$$

2.1780 ODE No. 1780

$$-ax - b + y(x)^2 y''(x) + y(x)y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 0.495371 (sec), leaf count = 0 , could not solve

`DSolve[-b - a*x + y[x]*Derivative[1][y][x]^2 + y[x]^2*Derivative[2][y][x] == 0, y[x],`

✓ **Maple** : cpu = 0.834 (sec), leaf count = 172

$$\left\{ \frac{b \ln(ax + b)}{a} - \int^{\frac{y(x)}{ax+b}} \frac{1}{2\sqrt{3}g^3 a^2 - 2\sqrt{3}} \left(b^2 - g^2 \sqrt[3]{-\frac{a}{-g^3 b^3}} \sqrt{3} + 3b^2 - g^2 \tan \left(\text{RootOf} \left(6b^2 \int \frac{-g^2}{-g^3 a^2 -} \right. \right. \right. \right.$$

2.1781 ODE No. 1781

$$(y(x)^2 + 1) y''(x) + (1 - 2y(x))y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0801208 (sec), leaf count = 19

$$\{ \{y(x) \rightarrow \tan(\log(-c_1(-c_2 - x)))\} \}$$

✓ **Maple** : cpu = 0.333 (sec), leaf count = 11

$$\{y(x) = \tan(\ln(_C1 x + _C2))\}$$

2.1782 ODE No. 1782

$$(y(x)^2 + 1) y''(x) - 3y(x)y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0870923 (sec), leaf count = 93

$$\left\{ \left\{ y(x) \rightarrow -\frac{ic_1(c_2 + x)}{\sqrt{c_1^2 x^2 + 2c_2 c_1^2 x + c_2^2 c_1^2 - 1}} \right\}, \left\{ y(x) \rightarrow \frac{ic_1(c_2 + x)}{\sqrt{c_1^2 x^2 + 2c_2 c_1^2 x + c_2^2 c_1^2 - 1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.329 (sec), leaf count = 56

$$\left\{ y(x) = _C1 x \sqrt{-(_C1^2 x^2 + 2 _C1 _C2 x + _C2^2 - 1)^{-1}} + _C2 \sqrt{-(_C1^2 x^2 + 2 _C1 _C2 x +} \right.$$

2.1783 ODE No. 1783

$$(y(x)^2 + x) y''(x) - 2(x - y(x)^2) y'(x)^3 + (4y(x)y'(x) + 1) y'(x) = 0$$

✓ **Mathematica** : cpu = 1.38117 (sec), leaf count = 26

$$\text{Solve} \left[x = c_2 e^{e^{-c_1 y(x)} - y(x)^2}, y(x) \right]$$

✓ **Maple** : cpu = 0.431 (sec), leaf count = 23

$$\left\{ \frac{-C1 y(x) + \ln(x + (y(x))^2) + C2 + 2}{y(x)} = 0 \right\}$$

2.1784 ODE No. 1784

$$(x^2 + y(x)^2) y''(x) - (xy'(x) - y(x)) (y'(x)^2 + 1) = 0$$

✓ **Mathematica** : cpu = 0.260216 (sec), leaf count = 74

$$\text{Solve} \left[\frac{1}{2} \left(i \cot(c_1) \left(\log \left(1 - \frac{iy(x)}{x} \right) - \log \left(1 + \frac{iy(x)}{x} \right) \right) + \log \left(1 - \frac{iy(x)}{x} \right) + \log \left(1 + \frac{iy(x)}{x} \right) \right) = c_2 \right]$$

✓ **Maple** : cpu = 1.007 (sec), leaf count = 49

$$\left\{ y(x) = \frac{1}{e^{-C2} (-C1 + 1)} \left(i e^{-C2} x (-C1 + 1) - ((2i - C1 + 2i - e^{-Z}) x)^{-C1-1} e^{-\frac{C2}{C1}} \right) \right\}$$

2.1785 ODE No. 1785

$$(x^2 + y(x)^2) y''(x) - 2(xy'(x) - y(x)) (y'(x)^2 + 1) = 0$$

✓ **Mathematica** : cpu = 0.363401 (sec), leaf count = 95

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} \left(-\sqrt{4x(e^{c_2} - x) + e^{2c_2} \cot^2(c_1)} - e^{c_2} \cot(c_1) \right) \right\}, \left\{ y(x) \rightarrow \frac{1}{2} \left(\sqrt{4x(e^{c_2} - x) + e^{2c_2} \cot^2(c_1)} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.602 (sec), leaf count = 83

$$\left\{ y(x) = \frac{1}{4 - C2} \left(-C1 + 1 + \sqrt{8i - C1 - C2 x + C1^2 - 16 - C2^2 x^2 - 8i - C2 x + 2 - C1 + 1} \right), y(x) = - \right.$$

2.1786 ODE No. 1786

$$f(x)(1-y(x))y(x)y'(x) + 2(1-y(x))y(x)y''(x) - (1-2y(x))y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.999713 (sec), leaf count = 95

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4} \exp \left(-i \int_1^x c_1 \left(-e^{-\int_1^{K[3]} \frac{1}{2} f(K[1]) dK[1]} \right) dK[3] - ic_2 \right) \left(1 + \exp \left(i \int_1^x c_1 \left(-e^{-\int_1^{K[3]} \frac{1}{2} f(K[1]) dK[1]} \right) dK[3] - ic_2 \right) \right)^{-1} \right. \right.$$

✓ **Maple** : cpu = 0.121 (sec), leaf count = 59

$$\left\{ y(x) = \frac{1}{8_C2} \left(4 \left(e^{-C1 \int e^{-1/2} \int f(x) dx dx} \right)^2 - C2^2 + 4 e^{-C1 \int e^{-1/2} \int f(x) dx dx} - C2 + 1 \right) \left(e^{-C1 \int e^{-\frac{f(x)}{2} dx} dx} \right)^{-1} \right.$$

2.1787 ODE No. 1787

$$h(y(x)) + 2(1-y(x))y(x)y''(x) - (1-3y(x))y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 100.244 (sec), leaf count = 0 , could not solve

DSolve[h[y[x]] - (1 - 3*y[x])*Derivative[1][y][x]^2 + 2*(1 - y[x])*y[x]*Derivative[2][y][x]]

✓ **Maple** : cpu = 0.236 (sec), leaf count = 84

$$\left\{ \int^{y(x)} \frac{1}{-b-1} \frac{1}{\sqrt{\int \frac{h(_b)}{(_b-1)^3 _b^2} d_b _b + _C1 _b}} d_b - x - _C2 = 0, \int^{y(x)} -\frac{1}{-b-1} \frac{1}{\sqrt{\int \frac{h(_b)}{(_b-1)^3 _b^2} d_b _b}} d_b - x - _C2 = 0 \right.$$

2.1788 ODE No. 1788

$$-4(1-y(x))y(x)^2 (-f'(x) - f(x)^2 - g'(x) + g(x)^2) + 4y(x)y'(x)(f(x)y(x) + g(x)) - 2(1-y(x))y(x)y''(x) + 2(1-y(x))y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 1.57092 (sec), leaf count = 0 , could not solve

DSolve[-4*(1 - y[x])*y[x]^2*(-f[x]^2 + g[x]^2 - Derivative[1][f][x] - Derivative[1][g][x]) + 4*y[x]*y'[x]*(f[x]*y[x] + g[x]) - 2*(1 - y[x])*y[x]*y''[x] + 2*(1 - y[x])*y'[x]^2]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ \sqrt{y(x)} - 2 \frac{\frac{\partial}{\partial x} DESol \left(\left\{ -1/4 e^{2 \int g(x) dx - 2 \int f(x) dx} - C1^2 - Y(x) - 2 g(x) \frac{d}{dx} Y(x) + \frac{d^2}{dx^2} Y(x) \right\} \right)}{DESol \left(\left\{ -1/4 e^{2 \int g(x) dx - 2 \int f(x) dx} - C1^2 - Y(x) - 2 g(x) \frac{d}{dx} Y(x) + \frac{d^2}{dx^2} Y(x) \right\} \right)}, \left\{ -Y(x) \right\} \right.$$

2.1789 ODE No. 1789

$$4y(x)^2(1-y(x))(-f'(x) + f(x)^2 - g'(x) - g(x)^2) - 4y(x)y'(x)(f(x)y(x) + g(x)) + (1-y(x))^3(f_0(x)^2y(x)^2 -$$

X Mathematica : cpu = 10.404 (sec), leaf count = 0 , could not solve

$$\text{DSolve}[(1 - y[x])^3(-f1[x]^2 + f0[x]^2*y[x]^2) + 4*(1 - y[x])*y[x]^2*(f[x]^2 - g[x]^2 -$$

X Maple : cpu = 0. (sec), leaf count = 0 , could not solve

$$\text{dsolve}(-2*y(x)*(1-y(x))*\text{diff}(\text{diff}(y(x),x),x)+(1-3*y(x))*\text{diff}(y(x),x)^2-4*y(x)*\text{diff}(y(x),x)^3*(f_0(x)^2*y(x)^2-f_1(x)^2)+4*y(x)^2*(1-y(x))*(f(x)^2-g(x)^2-\text{diff}(g(x),x)-\text{diff}(f(x),x))=0,y(x))$$

2.1790 ODE No. 1790

$$-h(y(x)) + 3(1 - y(x))y(x)y''(x) - 2(1 - 2y(x))y'(x)^2 = 0$$

✓ Mathematica : cpu = 22.636 (sec), leaf count = 182

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\int_1^{\#1} -\frac{1}{(1 - K[2])^{2/3} K[2]^{2/3} \sqrt{2 \int_1^{K[2]} -\frac{h(K[1]) \exp(-2(\frac{2}{3} \log(1-K[1]) + \frac{2}{3} \log(K[1]))}{3(K[1]-1)K[1]} dK[1]}} \right] \right\} \right\}$$

✓ Maple : cpu = 0.207 (sec), leaf count = 219

$$\left\{ \int^{y(x)} -3 \frac{1}{\sqrt{-6_b^2 \sqrt{-b} (_b - 1)} \int \frac{h(_b)}{(_b^2 - _b)^{4/3} _b (_b - 1)} d_b + 9_b^2 \sqrt{-b} (_b - 1) _C1 + 6_b \sqrt{-b} (_b - 1)} \right\}$$

2.1791 ODE No. 1791

$$-h(y(x)) + (1 - y(x))y''(x) - 3(1 - 2y(x))y'(x)^2 = 0$$

✓ Mathematica : cpu = 22.8736 (sec), leaf count = 164

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\int_1^{\#1} -\frac{e^{\frac{1}{2}(12-12K[2])}}{(K[2] - 1)^3 \sqrt{2 \int_1^{K[2]} -\frac{h(K[1]) \exp(-2(6(K[1]-1)+3 \log(K[1]-1))}{K[1]-1}} dK[1] + c_1}} \right] \right\} \right\}$$

✓ Maple : cpu = 0.293 (sec), leaf count = 90

$$\left\{ \int^{y(x)} \frac{1}{(_b - 1)^3 (e^{-b})^6} \frac{1}{\sqrt{-2 \int \frac{h(_b)}{(e^{-b})^{12} (_b - 1)^7} d_b + _C1}} d_b - x - _C2 = 0, \int^{y(x)} - \frac{1}{(_b - 1)^3 (e^{-b})^6} \frac{1}{\sqrt{-2 \int \frac{h(_b)}{(e^{-b})^{12} (_b - 1)^7} d_b + _C1}} d_b - x - _C2 = 0 \right.$$

2.1792 ODE No. 1792

$$a(y(x) - 1)y(x)y''(x) + y'(x)^2(by(x) + c) + h(y(x)) = 0$$

✓ **Mathematica** : cpu = 26.0628 (sec), leaf count = 222

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\int_1^{\#1} - \frac{K[2]^{-\frac{c}{a}} (1 - K[2])^{\frac{1}{2} \left(\frac{2b}{a} + \frac{2c}{a} \right)}}{\sqrt{2 \int_1^{K[2]} - \frac{h(K[1]) \exp\left(-\frac{2(c \log(K[1]) - (b+c) \log(1 - K[1]))}{a}\right)}{a(K[1]-1)K[1]} dK[1] + c_1}} dK[2] \right] \right. \right.$$

✓ **Maple** : cpu = 0.718 (sec), leaf count = 192

$$\left\{ \int^{y(x)} a \frac{1}{\sqrt{-a \left(-_C1 a + 2 \int \frac{h(_b)}{_b (_b - 1)} \left((_b - 1)^{\frac{b}{a}} \right)^2 \left((_b - 1)^{\frac{c}{a}} \right)^2 \left(_b^{\frac{c}{a}} \right)^{-2} d_b \right)}} \left(_b^{\frac{c}{a}} \right)^{-1} \left((_b - 1) \right)} d_b$$

2.1793 ODE No. 1793

$$a(y(x) - 1)y(x)y''(x) - (a - 1)(2y(x) - 1)y'(x)^2 + f(x)(y(x) - 1)y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 1.34739 (sec), leaf count = 113

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[- \frac{a(1 - \#1)^{-1/a} (-\#1 - 1)\#1^{\frac{1}{a}} \left((a + 1) {}_2F_1\left(-\frac{1}{a}, \frac{1}{a}; 1 + \frac{1}{a}; \#1\right) + \#1 {}_2F_1\left(\frac{1}{a}, -\frac{1}{a}; 1 + \frac{1}{a}; \#1\right) \right)}{a + 1} \right. \right.$$

✓ **Maple** : cpu = 0.354 (sec), leaf count = 40

$$\left\{ -C1 e^{-\frac{fx}{a}} - C2 + \int^{y(x)} \frac{\sqrt[3]{-a (_a - 1)}}{-a (_a - 1)} d_a = 0 \right\}$$

2.1794 ODE No. 1794

$$ab(y(x)-1)y(x)y''(x)+y'(x)^2(-((2ab-a-b)y(x)+(1-a)b))+f(x)(y(x)-1)y(x)y'(x) = 0$$

✓ **Mathematica** : cpu = 1.26427 (sec), leaf count = 98

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[-\frac{a \#1^{\frac{1}{a}} \left((a+1) {}_2F_1\left(\frac{1}{a}, -\frac{1}{b}; 1 + \frac{1}{a}; \#1\right) + \#1 {}_2F_1\left(1 + \frac{1}{a}, \frac{b-1}{b}; 2 + \frac{1}{a}; \#1\right) \right)}{a+1} \right] \& \right\} \right.$$

✓ **Maple** : cpu = 0.378 (sec), leaf count = 46

$$\left\{ -C1 e^{-\frac{fx}{ab}} - C2 + \int^{y(x)} \frac{\sqrt{-a} \sqrt{-a-1}}{-a(-a-1)} d-a = 0 \right\}$$

2.1795 ODE No. 1795

$$xy(x)^2y''(x) - a = 0$$

✓ **Mathematica** : cpu = 0.255585 (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 = 1.148 (sec), leaf count = 793

$$\left\{ y(x) = \frac{-C1 x \left(81 - C1^2 a^2 + 18 a - C1 e^{\text{RootOf}(243 \text{csgn}(-C1^{-1}) - C1^4 a^2 x - 54 - Z e^{-Z} a x - C1^3 - 3 \text{csgn}(-C1^{-1}) (e^{-Z})^2 - C1^3)} \right)}{2 e^{\text{RootOf}(243 \text{csgn}(-C1^{-1}) - C1^4 a^2 x - 54 - Z e^{-Z} a x - C1^3 - 3 \text{csgn}(-C1^{-1}) (e^{-Z})^2 - C1^3)}} \right.$$

2.1796 ODE No. 1796

$$(a^2 - x^2) (a^2 - y(x)^2) y''(x) + (a^2 - x^2) y(x) y'(x)^2 - x(a^2 - y(x)^2) y'(x) = 0$$

✓ **Mathematica** : cpu = 0.325748 (sec), leaf count = 66

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{2} e^{-c_2} \left(\sqrt{x^2 - a^2} + x \right)^{-c_1} \left(a^2 \left(\sqrt{x^2 - a^2} + x \right)^{2c_1} + e^{2c_2} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.492 (sec), leaf count = 51

$$\left\{ y(x) = \frac{1}{2 - C_2} \left(\left(\left(x + \sqrt{-a^2 + x^2} \right)^{-C_1} \right)^2 - C_2^2 + a^2 \right) \left(\left(x + \sqrt{-a^2 + x^2} \right)^{-C_1} \right)^{-1} \right\}$$

2.1797 ODE No. 1797

$$(y(x)-1)^3 (ay(x)^2 + b) + cxy(x)^2(y(x)-1) + dx^2y(x)^2(y(x)+1) + 2x^2y(x)(y(x)-1)y''(x) - x^2(3y(x)-1)y'(x)) = 0$$

✗ **Mathematica** : cpu = 24.1082 (sec), leaf count = 0 , could not solve

```
DSolve[c*x*(-1 + y[x])*y[x]^2 + d*x^2*y[x]^2*(1 + y[x]) + (-1 + y[x])^3*(b + a*y[x]^2) + 1 + y[x])*y[x]*Derivative[1][y][x] - x^2*(-1 + 3*y[x])*Derivative[1][y][x]^2 + 2*x^2*(1 + y[x])*y[x]*Derivative[2][y][x] == 0, y[x], x]
```

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

```
dsolve(2*x^2*y(x)*(-1+y(x))*diff(diff(y(x), x), x) - x^2*(3*y(x)-1)*diff(y(x), x)^2 + 2*x*y(x) + 1+y(x))*diff(y(x), x) + (a*y(x)^2+b)*(-1+y(x))^3 + c*x*y(x)^2*(-1+y(x)) + d*x^2*y(x)^2*(1+y(x))) = 0, y(x), x)
```

2.1798 ODE No. 1798

$$x^3y(x)^2y''(x) + (y(x) + x) (xy'(x) - y(x))^3 = 0$$

✗ **Mathematica** : cpu = 38.1617 (sec), leaf count = 0 , could not solve

```
DSolve[(x + y[x])*(-y[x] + x*Derivative[1][y][x])^3 + x^3*y[x]^2*Derivative[2][y][x] = 0, y[x], x]
```

✓ **Maple** : cpu = 0.522 (sec), leaf count = 166

$$\left\{ y(x) = \text{RootOf} \left(-2 \ln(x) - \int^{-Z} 1 \left(i\sqrt{3}Y_{i\sqrt{3}}(2\sqrt{-f}) - C_1 \sqrt{-f} + i\sqrt{3}J_{i\sqrt{3}}(2\sqrt{-f}) \sqrt{-f} + Y_{i\sqrt{3}}(2\sqrt{-f}) \right) dx \right) \right\}$$

2.1799 ODE No. 1799

$$y(x)^3 y''(x) - a = 0$$

✓ **Mathematica** : cpu = 1.83042 (sec), leaf count = 88

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{a + c_1^2 x^2 + 2c_2 c_1^2 x + c_2^2 c_1^2}}{\sqrt{c_1}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{a + c_1^2 x^2 + 2c_2 c_1^2 x + c_2^2 c_1^2}}{\sqrt{c_1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.419 (sec), leaf count = 70

$$\left\{ y(x) = \frac{1}{-C1} \sqrt{-C1 (-C1^2 - C2^2 + 2 - C1^2 - C2 x + -C1^2 x^2 + a)}, y(x) = -\frac{1}{-C1} \sqrt{-C1 (-C1^2 - C2^2 + 2 - C1^2 - C2 x + -C1^2 x^2 + a)} \right\}$$

2.1800 ODE No. 1800

$$y(x) (y(x)^2 + 1) y''(x) + (1 - 3y(x)^2) y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.499741 (sec), leaf count = 84

$$\left\{ \left\{ y(x) \rightarrow -\frac{\sqrt{-2c_1 x - 2c_2 c_1 - 1}}{\sqrt{2}\sqrt{c_1 x + c_2 c_1}} \right\}, \left\{ y(x) \rightarrow \frac{\sqrt{-2c_1 x - 2c_2 c_1 - 1}}{\sqrt{2}\sqrt{c_1 x + c_2 c_1}} \right\} \right\}$$

✓ **Maple** : cpu = 0.35 (sec), leaf count = 67

$$\left\{ y(x) = -\frac{1}{2 - C1 x + 2 - C2} \sqrt{-(2 - C1 x + 2 - C2)(2 - C1 x + 2 - C2 + 1)}, y(x) = \frac{1}{2 - C1 x + 2 - C2} \sqrt{-(2 - C1 x + 2 - C2)(2 - C1 x + 2 - C2 + 1)} \right\}$$

2.1801 ODE No. 1801

$$-a^2 x y(x)^2 + 2y(x)^3 y''(x) + y(x)^4 - 1 = 0$$

✗ **Mathematica** : cpu = 43.5303 (sec), leaf count = 0 , could not solve

`DSolve[-1 - a^2*x*y[x]^2 + y[x]^4 + 2*y[x]^3*Derivative[2][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(2*y(x)^3*diff(diff(y(x),x),x)+y(x)^4-a^2*x*y(x)^2-1=0,y(x))`

2.1802 ODE No. 1802

$$-ax^2 - bx - c + 2y(x)^3y''(x) + y(x)^2y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 0.342285 (sec), leaf count = 0 , could not solve

DSolve[-c - b*x - a*x^2 + y[x]^2*Derivative[1][y][x]^2 + 2*y[x]^3*Derivative[2][y][x]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve(2*y(x)^3*diff(diff(y(x),x),x)+y(x)^2*diff(y(x),x)^2-a*x^2-b*x-c=0,y(x))

2.1803 ODE No. 1803

$$-a0(a-y(x))^2(b-y(x))^2(c-y(x))^2 - a2(a-y(x))^2(c-y(x))^2 - a3(a-y(x))^2(b-y(x))^2 + 2(a-y(x))(b-y(x))$$

✓ **Mathematica** : cpu = 18.5657 (sec), leaf count = 10387

$$\left\{ \text{Solve} \left[\frac{2F \left(\sin^{-1} \left(\sqrt{\frac{(\text{Root}[a0\#1^4 + (-aa0-ba0-ca0-c1)\#1^3 + (-a1-a2-a3+aa0b+aa0c+a0bc+ac1+bc1+cc1)\#1^2 + (aa2+ca2+...)}{(\text{Root}[a0\#1^4 + (-aa0-ba0-ca0-c1)\#1^3 + (-a1-a2-a3+aa0b+aa0c+a0bc+ac1+bc1+cc1)\#1^2 + (aa2+ca2+...}}}{\text{Root}[a0\#1^4 + (-aa0-ba0-ca0-c1)\#1^3 + (-a1-a2-a3+aa0b+aa0c+a0bc+ac1+bc1+cc1)\#1^2 + (aa2+ca2+...}} \right)}{\text{Root}[a0\#1^4 + (-aa0-ba0-ca0-c1)\#1^3 + (-a1-a2-a3+aa0b+aa0c+a0bc+ac1+bc1+cc1)\#1^2 + (aa2+ca2+...}} \right)}{\text{Root}[a0\#1^4 + (-aa0-ba0-ca0-c1)\#1^3 + (-a1-a2-a3+aa0b+aa0c+a0bc+ac1+bc1+cc1)\#1^2 + (aa2+ca2+...}} \right. \right.$$

✓ **Maple** : cpu = 3.826 (sec), leaf count = 230971

result too large to display

2.1804 ODE No. 1804

$$y''(x) (-ay(x) - b + 4y(x)^3) - \left(6y(x)^2 - \frac{a}{2}\right) y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 2.90449 (sec), leaf count = 415

$$\text{Solve} \left[\frac{2 \sqrt{\frac{y(x) - \text{Root}[4\#1^3 - \#1a - b\&,1]}{\text{Root}[4\#1^3 - \#1a - b\&,3] - \text{Root}[4\#1^3 - \#1a - b\&,1]}} \sqrt{\frac{y(x) - \text{Root}[4\#1^3 - \#1a - b\&,2]}{\text{Root}[4\#1^3 - \#1a - b\&,3] - \text{Root}[4\#1^3 - \#1a - b\&,2]}} (y(x) - \text{Root}[4\#1^3 - \#1a - b\&,3] - \text{Root}[4\#1^3 - \#1a - b\&,2] - \text{Root}[4\#1^3 - \#1a - b\&,1])}{c_1 \sqrt{2ay(x) + 2b - 8y(x)}} \right]$$

✓ **Maple** : cpu = 0.334 (sec), leaf count = 31

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{4_a^3 - _a a - b}} d_a - _C1 x - _C2 = 0 \right\}$$

2.1805 ODE No. 1805

$$(-ay(x) - b + 4y(x)^3) (f(x)y'(x) + y''(x)) - \left(6y(x)^2 - \frac{a}{2}\right) y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 1.83135 (sec), leaf count = 436

$$\text{Solve} \left[\frac{2 \sqrt{\frac{y(x) - \text{Root}[4\#1^3 - \#1a - b\&,1]}{\text{Root}[4\#1^3 - \#1a - b\&,3] - \text{Root}[4\#1^3 - \#1a - b\&,1]}} \sqrt{\frac{y(x) - \text{Root}[4\#1^3 - \#1a - b\&,2]}{\text{Root}[4\#1^3 - \#1a - b\&,3] - \text{Root}[4\#1^3 - \#1a - b\&,2]}} (y(x) - \text{Root}[4\#1^3 - \#1a - b\&,3])}{\sqrt{ay(x) + b - 4y(x)^3}} \right]$$

✓ **Maple** : cpu = 0.347 (sec), leaf count = 34

$$\left\{ -C1 e^{-fx} - C2 + \int^{y(x)} \frac{1}{\sqrt{4a^3 - aa - b}} da = 0 \right\}$$

2.1806 ODE No. 1806

$$-f(x)((y(x)-1)y(x)(y(x)-x))^{3/2} + 2(1-y(x))(x^2 - 2xy(x) + y(x))y(x)y'(x) - 2(1-x)x(1-y(x))(x-y(x))y'(x) = 0$$

✗ **Mathematica** : cpu = 19.9447 (sec), leaf count = 0 , could not solve

$$\text{DSolve}[-((1 - y[x])^2*y[x]^2) - f[x]*((-1 + y[x])*y[x]*(-x + y[x]))^(3/2) + 2*(1 - y[x])*x*(x - y[x])*y'[x] = 0, y[x], x]$$

✓ **Maple** : cpu = 5.534 (sec), leaf count = 916

$$\left\{ \left(\frac{3}{4} \int \frac{1}{x-1} e^{f \frac{1}{x(x-1)}} \text{EllipticE}(\sqrt{x}) (\text{EllipticK}(\sqrt{x}))^{-1} dx \int x^{\frac{3}{2}} \int^{y(x)} \frac{1}{(x-a)^2 \sqrt{-a^3 - a^2x - a^2 + ax}} da \right) \right\}$$

2.1807 ODE No. 1807

$$a(1-y(x))^2(x-y(x))^2y(x)^2 + bx(1-y(x))^2(x-y(x))^2 - c(1-x)(x-y(x))^2y(x)^2 - d(1-x)x(1-y(x))^2y(x)^2 + 2y(x)y'(x) = 0$$

✗ **Mathematica** : cpu = 36.4738 (sec), leaf count = 0 , could not solve

$$\text{DSolve}[b*x*(1 - y[x])^2*(x - y[x])^2 - d*(1 - x)*x*(1 - y[x])^2*y[x]^2 - c*(1 - x)*(x - y[x])^2*y[x]^2 + 2*y[x]*y'[x] = 0, y[x], x]$$

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

$$\text{dsolve}(2*x^2*y(x)*(1-x)^2*(1-y(x))*(x-y(x))*\text{diff}(\text{diff}(y(x), x), x) - x^2*(1-x)^2*(x-2*x*y(x)-2*y(x)+3*y(x)^2)*\text{diff}(y(x), x)^2 - 2*x*y(x)*(1-x)*(1-y(x))*(x^2+y(x)-2*x*y(x))*\text{diff}(y(x), x) + b*x*(1-y(x))^2*(x-y(x))^2 - c*(1-x)*y(x)^2*(x-y(x))^2 - d*x*y(x)^2*(1-x)*(1-y(x))^2 + a*y(x)^2*(x-y(x))^2*(1-y(x))^2 = 0, y(x))$$

2.1808 ODE No. 1808

$$b\sqrt{(1-y(x)^2)(1-a^2y(x)^2)}y'(x)^2+(y(x)^2-1)(a^2y(x)^2-1)y''(x)+y(x)(-2a^2y(x)^2+a^2+1)y'(x)^2=$$

✓ **Mathematica** : cpu = 103.91 (sec), leaf count = 172

$$\text{Solve} \left[\log(x) - b \left(\frac{\log \left(bc_1 \sqrt{1-y(x)^2} \sqrt{1-a^2y(x)^2} + \sqrt{y(x)^2-1} \sqrt{a^2y(x)^2-1} \exp \left(\frac{b\sqrt{1-y(x)^2}\sqrt{1-a^2y(x)^2}}{\sqrt{y(x)^2-1}\sqrt{a^2y(x)^2-1}} \right)}{b} \right) \right. \right.$$

✓ **Maple** : cpu = 1.13 (sec), leaf count = 72

$$\left\{ \int^{y(x)} e^{\int \frac{1}{(-b^2-1)(-b^2a^2-1)} \left(-2a^2-b^3+_b a^2+_b \sqrt{(-b^2-1)(-b^2a^2-1)}+_b \right) d_b} d_b - C1 x - C2 = 0 \right\}$$

2.1809 ODE No. 1809

$$y''(x)(ax^2+2bx+c+y(x)^2)^2+dy(x)=0$$

✗ **Mathematica** : cpu = 45.6805 (sec), leaf count = 0 , could not solve

$$\text{DSolve}[d*y[x] + (c + 2*b*x + a*x^2 + y[x]^2)^2*Derivative[2][y][x] == 0, y[x], x]$$

✓ **Maple** : cpu = 0.953 (sec), leaf count = 382

$$\left\{ y(x) = \text{RootOf} \left(-a \arctan \left((ax+b) \frac{1}{\sqrt{ac-b^2}} \right) - \int^{-Z} \frac{a}{-f^4ac + f^4b^2 + C1 f^2a^2 - c f^2a + b^2} \right. \right.$$

2.1810 ODE No. 1810

$$\sqrt{y(x)}y''(x) - a = 0$$

✓ **Mathematica** : cpu = 0.1052 (sec), leaf count = 1677

$$\left\{ \left\{ y(x) \rightarrow \frac{3c_1^2}{16a^2} + \sqrt[3]{-\frac{221184c_1^6}{a^6} + \frac{159252480x^2c_1^3}{a^2} + \frac{159252480c_2^2c_1^3}{a^2} + \frac{318504960xc_2c_1^3}{a^2} + 2293235712a^2x^4 + 2293235} \right. \right.$$

✓ **Maple** : cpu = 0.459 (sec), leaf count = 55

$$\left\{ \int^{y(x)} \frac{1}{\sqrt{4\sqrt{-aa} - C1}} d_{-a-x-C2} = 0, \int^{y(x)} -\frac{1}{\sqrt{4\sqrt{-aa} - C1}} d_{-a-x-C2} = 0 \right\}$$

2.1811 ODE No. 1811

$$\sqrt{x^2 + y(x)^2} y''(x) - a(y'(x)^2 + 1)^{3/2} = 0$$

✗ **Mathematica** : cpu = 300.016 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 4.477 (sec), leaf count = 1864

$$\left\{ y(x) = \text{RootOf} \left(-\ln(x) + \int^{-z} \frac{1}{-g^2 + 1} \left(\text{RootOf} \left(\arctan(-g) + \int^{-z} \frac{1}{(-f^2 a^2 + a^2 - 1)(-f^2 + 1)} \right) \right) \right) \right\}$$

2.1812 ODE No. 1812

$$y(x)y''(x)(1 - \log(y(x))) + y'(x)^2(\log(y(x)) + 1) = 0$$

✓ **Mathematica** : cpu = 0.0278604 (sec), leaf count = 29

$$\left\{ \left\{ y(x) \rightarrow e^{\frac{c_1 x + c_2 c_1 - 1}{c_1(c_2 + x)}} \right\} \right\}$$

✓ **Maple** : cpu = 0.035 (sec), leaf count = 19

$$\left\{ y(x) = e^{\frac{-C1 x + C2 - 1}{-C1 x + C2}} \right\}$$

2.1813 ODE No. 1813

$$Ay(x) (a \sin^2(y(x)) + c) + y''(x) (a \sin^2(y(x)) + b) + ay'(x)^2 \sin(y(x)) \cos(y(x)) = 0$$

✗ Mathematica : cpu = 100.85 (sec), leaf count = 0 , could not solve

```
DSolve[A*(c + a*Sin[y[x]]^2)*y[x] + a*Cos[y[x]]*Sin[y[x]]*Derivative[1][y][x]^2 + (b +
```

✓ Maple : cpu = 0.388 (sec), leaf count = 146

$$\left\{ \int^{y(x)} \sqrt{2}(b + a(\sin(_a))^2) \frac{1}{\sqrt{(b + a(\sin(_a))^2) (2Aa_a \cos(_a) \sin(_a) - Aa(\sin(_a))^2 - Aa_a^2)}} \right.$$

2.1814 ODE No. 1814

$$ah(y(x))y'(x)^2 + h(y(x))y''(x) + j(y(x)) = 0$$

✓ Mathematica : cpu = 13.0921 (sec), leaf count = 116

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\int_1^{\#1} - \frac{e^{aK[2]}}{\sqrt{2 \int_1^{K[2]} - \frac{e^{2aK[1]} j(K[1])}{h(K[1])} dK[1] + c_1}} dK[2] \right] [c_2 + x] \right\}, \left\{ y(x) \rightarrow \text{Inv} \right. \right.$$

✓ Maple : cpu = 0.155 (sec), leaf count = 90

$$\left\{ \int^{y(x)} \frac{1}{(h(_b))^{-a}} \frac{1}{\sqrt{-2 \int \frac{(h(_b))^a j(_b)}{h(_b)} d_b + _C1}} d_b - x - _C2 = 0, \int^{y(x)} - \frac{1}{(h(_b))^{-a}} \frac{1}{\sqrt{-2 \int \frac{(h(_b))^a j(_b)}{h(_b)} d_b + _C1}} d_b - x - _C2 = 0 \right.$$

2.1815 ODE No. 1815

$$h(y(x))^2 \left(-j \left(x, \frac{y'(x)}{h(y(x))} \right) \right) + h(y(x))y''(x) - h(y(x))y'(x)^2 = 0$$

✗ Mathematica : cpu = 1.2068 (sec), leaf count = 0 , could not solve

```
DSolve[-(h[y[x]]^2*j[x, Derivative[1][y][x]/h[y[x]]) - h[y[x]]*Derivative[1][y][x]^2
```

✓ Maple : cpu = 0.937 (sec), leaf count = 74

$$\left\{ y(x) = \text{ODESolStruc} \left(\text{RootOf} \left(\int -b(_a) d_a + _C1 - \int^{-Z} (h(_f))^{-1} d_f \right), \left\{ \frac{d}{d_a} b(_a) = j(_a) \right. \right. \right.$$

2.1816 ODE No. 1816

$$x^2(-y(x))y'(x) + y'(x)y''(x) - xy(x)^2 = 0$$

✗ **Mathematica** : cpu = 63.8796 (sec), leaf count = 0 , could not solve

DSolve[-(x*y[x]^2) - x^2*y[x]*Derivative[1][y][x] + Derivative[1][y][x]*Derivative[2][y][x]

✓ **Maple** : cpu = 1.509 (sec), leaf count = 46

$$\left\{ y(x) = ODESolStruc\left(-b(-a), \left[\left\{ -(-b(-a))^2 - a^2 + \left(\frac{d}{d_a} b(-a) \right)^2 + -C1 = 0 \right\}, \{-a = x, -b(-a) \right\} \right. \right.$$

2.1817 ODE No. 1817

$$4y'(x)^2 + (xy'(x) - y(x))y''(x) = 0$$

✗ **Mathematica** : cpu = 15.3141 (sec), leaf count = 0 , could not solve

DSolve[4*Derivative[1][y][x]^2 + (-y[x] + x*Derivative[1][y][x])*Derivative[2][y][x]

✓ **Maple** : cpu = 0.554 (sec), leaf count = 40

$$\left\{ y(x) = e^{\int \ln(x) e^{\text{RootOf}(\ln(e^{-Z}-1)e^{-Z} + -C1 e^{-Z} - -Z e^{-Z} - -b e^{-Z} + 2)} - 1 d_b + -C2} \right\}$$

2.1818 ODE No. 1818

$$(xy'(x) - y(x))y''(x) - (y'(x)^2 + 1)^2 = 0$$

✗ **Mathematica** : cpu = 1.47361 (sec), leaf count = 0 , could not solve

DSolve[-(1 + Derivative[1][y][x]^2)^2 + (-y[x] + x*Derivative[1][y][x])*Derivative[2][y][x]

✓ **Maple** : cpu = 0.75 (sec), leaf count = 66

$$\left\{ y(x) = \text{RootOf}\left(-\ln(x) + \int^{-Z} \frac{-f + \text{RootOf}(-C1 \tan(-Z^{-1}) - Z + -f - C1 \tan(-Z^{-1}) + -C1}{-f^2 +} \right. \right.$$

2.1819 ODE No. 1819

$$ax^3y'(x)y''(x) + by(x)^2 = 0$$

✗ **Mathematica** : cpu = 90.736 (sec), leaf count = 0 , could not solve

DSolve[b*y[x]^2 + a*x^3*Derivative[1][y][x]*Derivative[2][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 0.42 (sec), leaf count = 42

$$\left\{ y(x) = e^{\int^{\ln(x)} \text{RootOf}\left(-\int^{-Z} \frac{aa}{a_a^3 - a_a^2 + b} d_a - b + C1\right) d_b + C2} \right\}$$

2.1820 ODE No. 1820

$$y''(x) (f1(x)y'(x) + f2(x)y(x)) + f3(x)y'(x)^2 + f4(x)y(x)y'(x) + f5(x)y(x)^2 = 0$$

✗ **Mathematica** : cpu = 310.161 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 1.082 (sec), leaf count = 81

$$\left\{ y(x) = \text{ODESolStruc}\left(e^{\int -b(-a) d_a + C1}, \left[\frac{d}{d_a} b(-a) = -\frac{(-b(-a))^3 f1 + (f2 + f3)(-b(-a))^2 + f4(-b(-a))}{-b(-a) f1 + f2}\right]\right)\right\}$$

2.1821 ODE No. 1821

$$(x^2 + 2y(x)^2y'(x)) y''(x) + 2y(x)y'(x)^3 + 3xy'(x) + y(x) = 0$$

✗ **Mathematica** : cpu = 42.4931 (sec), leaf count = 0 , could not solve

DSolve[y[x] + 3*x*Derivative[1][y][x] + 2*y[x]*Derivative[1][y][x]^3 + (x^2 + 2*y[x]^2)

✓ **Maple** : cpu = 2.66 (sec), leaf count = 54

$$\left\{ y(x) = \text{ODESolStruc}\left(-b(-a), \left[\left(-b(-a)\right)^2 \left(\frac{d}{d_a} b(-a)\right)^2 + a^2 \frac{d}{d_a} b(-a) + b(-a) a + C\right]\right)\right\}$$

2.1822 ODE No. 1822

$$(y'(x)^2 + y(x)^2) y''(x) + y(x)^3 = 0$$

✓ **Mathematica** : cpu = 1.07153 (sec), leaf count = 371

$$\left\{ \left\{ y(x) \rightarrow c_2 \exp \left(\frac{1}{12} \left(-2\sqrt{3} \tan^{-1} \left(\frac{1 + 2 \operatorname{InverseFunction} \left[\frac{(\sqrt{3}-i) \tan^{-1} \left(\frac{\#1}{\sqrt{\frac{1}{2}(1-i\sqrt{3})}} \right) + (\sqrt{3}+i) \tan^{-1} \left(\frac{\#1}{\sqrt{\frac{1}{2}(1+i\sqrt{3})}} \right)}{\sqrt{6(1-i\sqrt{3})}} + \frac{\#1}{\sqrt{6(1+i\sqrt{3})}} \right)}{\sqrt{3}} \right) \right) \right. \right.$$

✓ **Maple** : cpu = 1.424 (sec), leaf count = 295

$$\left\{ y(x) = -C2 \left(-C1 + \tan(\sqrt{3}x) \right)^{\frac{-C1^2}{2-C1^2+2}} \left(1 + \left(\tan(\sqrt{3}x) \right)^2 \right)^{-\frac{C1^2}{4-C1^2+4}} \left(-C1 + \tan(\sqrt{3}x) \right)^{\frac{1}{2-C1^2+2}} \right.$$

2.1823 ODE No. 1823

$$y''(x) (a(xy'(x) - y(x)) + y'(x)^2) - b = 0$$

✗ **Mathematica** : cpu = 0.163469 (sec), leaf count = 0 , could not solve

DSolve[-b + (Derivative[1][y][x]^2 + a*(-y[x] + x*Derivative[1][y][x]))*Derivative[2][y][x]]

✓ **Maple** : cpu = 0.756 (sec), leaf count = 423

$$\left\{ y(x) = -\frac{ax^2}{4} + \operatorname{RootOf} \left(-x - \int^{-Z} \frac{1}{-f^2 a^2 - 4_f b + 2_C1} \sqrt{-f^3 a^3 - 4_f^2 ab + 2_f a_C1 - \sqrt{4_f}} \right) \right.$$

2.1824 ODE No. 1824

$$y''(x) \left(a\sqrt{y'(x)^2 + 1} - xy'(x) \right) - y'(x)^2 - 1 = 0$$

✓ **Mathematica** : cpu = 0.337172 (sec), leaf count = 347

$$\left\{ \left\{ y(x) \rightarrow \frac{-2\sqrt{x^2(a^2 + c_1^2 - x^2)} + c_1x \log\left(-c_1\left(\sqrt{x^2(a^2 + c_1^2 - x^2)} + c_1x\right) + a^2(-x) + ax^2\right) + c_1x \log\left(\sqrt{x^2(a^2 + c_1^2 - x^2)} - c_1x\right) + a^2(-x) + ax^2\right)}{a^2(a^2 - x^2)} \right. \right.$$

✓ **Maple** : cpu = 1.62 (sec), leaf count = 99

$$\left\{ y(x) = \int \frac{1}{a(a^2 - x^2)} \left(-C1 a^2 + x\sqrt{a^2(-C1^2 + a^2 - x^2)} \right) dx + C2, y(x) = \int -\frac{1}{a(a^2 - x^2)} \left(-C1 \right) dx + C2 \right.$$

2.1825 ODE No. 1825

$$f(x) + y''(x)h(y'(x)) + j(y(x))y'(x) = 0$$

✗ **Mathematica** : cpu = 0.039726 (sec), leaf count = 0 , could not solve

`DSolve[f[x] + j[y[x]]*Derivative[1][y][x] + h[Derivative[1][y][x]]*Derivative[2][y][x]]`

✓ **Maple** : cpu = 0.989 (sec), leaf count = 50

$$\left\{ y(x) = ODESolStruc\left(-f(-b), \left\{ \int^{-f(-b)} j(-a) d_a + \int^{\frac{d}{a-b}-f(-b)} h(-a) d_a + -b f + -C1 = 0 \right\}, \left\{ \right. \right.$$

2.1826 ODE No. 1826

$$-ay(x) - b + y''(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.72651 (sec), leaf count = 119

$$\left\{ \text{Solve}\left[\frac{(ay(x) + b)^2 {}_2F_1\left(\frac{1}{2}, \frac{2}{3}; \frac{5}{3}; -\frac{4(b+ay(x))^{3/2}}{3ac_1}\right)^2}{a^2c_1} = (c_2 + x)^2, y(x)\right], \text{Solve}\left[\frac{(ay(x) + b)^2 {}_2F_1\left(\frac{1}{2}, \frac{2}{3}; \frac{5}{3}; \frac{4(b+ay(x))^{3/2}}{3ac_1}\right)^2}{a^2c_1} = (c_2 + x)^2, y(x)\right] \right.$$

✓ **Maple** : cpu = 0.624 (sec), leaf count = 201

$$\left\{ \int^{y(x)} a\sqrt{3} \frac{1}{\sqrt{a(4-a\sqrt{-aa+ba} + 4b\sqrt{-aa+b} - C1)}} d_a - x - C2 = 0, \int^{y(x)} -3 \frac{1}{\sqrt{-3a(4-a\sqrt{-aa+ba} + 4b\sqrt{-aa+b} - C1)}} d_a - x - C2 = 0 \right.$$

2.1827 ODE No. 1827

$$a^2 y''(x)^2 - 2axy''(x) + y'(x) = 0$$

✗ **Mathematica** : cpu = 0.757356 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x] - 2*a*x*Derivative[2][y][x] + a^2*Derivative[2][y][x]^2 ==

✓ **Maple** : cpu = 3.053 (sec), leaf count = 81

$$\left\{ y(x) = \int \text{RootOf} \left(- \int_{-g}^{-Z} \left(x \sqrt{x^2 - f} - x^2 + 2 f a \right)^{-1} d_f + _C1 \right) dx + _C2, y(x) = \int \text{RootOf} \left(\right. \right.$$

2.1828 ODE No. 1828

$$2(x^2 + 1) y''(x)^2 + 2y'(x) (y'(x) + x) - x(4y'(x) + x) y''(x) - 2y(x) = 0$$

✓ **Mathematica** : cpu = 0.0101352 (sec), leaf count = 32

$$\left\{ \left\{ y(x) \rightarrow -\frac{1}{2} \sqrt{c_2 - c_1^2 x^2 + c_1 x + c_2} \right\} \right\}$$

✓ **Maple** : cpu = 0.95 (sec), leaf count = 67

$$\left\{ y(x) = \frac{-C1 x^2}{2} + _C2 x + _C1^2 + _C2^2, y(x) = -\frac{3 x^2}{16} + \frac{\text{Arcsinh}(x) x \sqrt{x^2 + 1}}{8} + \frac{(\text{Arcsinh}(x))^2}{16} + _C2 \right\}$$

2.1829 ODE No. 1829

$$3x^2 y''(x)^2 + 4y'(x)^2 - 2(3xy'(x) + y(x)) y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0064 (sec), leaf count = 24

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1^2 x^2}{c_2} + c_1 x + c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.701 (sec), leaf count = 32

$$\left\{ y(x) = x^{\frac{2\sqrt{3}}{3}} _C1 x, y(x) = \frac{-C1^2 x^2}{-C2} + _C1 x + _C2 \right\}$$

2.1830 ODE No. 1830

$$(2 - 9x)x^2y''(x)^2 + 6y(x)y''(x) - 36xy'(x)^2 - 6(1 - 6x)xy'(x)y''(x) = 0$$

✓ **Mathematica** : cpu = 0.0280316 (sec), leaf count = 24

$$\left\{ \left\{ y(x) \rightarrow \frac{c_1^2 x^3}{c_2} + c_1 x + c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.904 (sec), leaf count = 312

$$\left\{ y(x) = 27 _C1 \left((9x - 1) \sqrt{9} + 9 \sqrt{(9x - 2)x} \right)^{-\frac{5\sqrt{9}}{18}} \sqrt{1 \left(1/2 \frac{(-1/2 + 5/2x)\sqrt{16}}{\sqrt{(9x - 2)x}} + 1 \right) \frac{1}{\sqrt{\frac{-16x^2 + 8x}{(9x - 2)x}}}} \right\}$$

2.1831 ODE No. 1831

$$y(x)(xF(0, 2) + xF(2, 0))y''(x) + xF(2, 2)y''(x)^2 + xF(1, 1)y''(x) + y'(x)((xF(1, 2) + xF(2, 1))y''(x) + y(x))$$

✗ **Mathematica** : cpu = 300.117 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 1.107 (sec), leaf count = 191

$$\left\{ y(x) = ODESolStruc \left(e^{\int -b(_a) d_a + _C1}, \left[\left\{ \frac{d}{d_a} b(_a) = -(_b(_a))^2 - \frac{((F_{2,1})(_a) + (F_{1,2})(_a))}{2 (F_{2,2})(_a)} \right\} \right] \right) \right\}$$

2.1832 ODE No. 1832

$$y(x)y''(x)^2 - ae^{2x} = 0$$

✗ **Mathematica** : cpu = 0.667978 (sec), leaf count = 0 , could not solve

DSolve[-(a*E^(2*x)) + y[x]*Derivative[2][y][x]^2 == 0, y[x], x]

✓ **Maple** : cpu = 1.597 (sec), leaf count = 117

$$\left\{ y(x) = ODESolStruc \left(_a \left(e^{-\frac{2 \int -b(_a) d_a - \frac{2 _C1}{3}}}{3} \right)^{-1}, \left[\left\{ \frac{d}{d_a} b(_a) = -\frac{(_b(_a))^3}{9_a} (-4_a^2 + 9\sqrt{_a a}) \right\} \right] \right) \right\}$$

2.1833 ODE No. 1833

$$y''(x)^2 (a^2 y(x)^2 - b^2) + y'(x)^2 (a^2 y'(x)^2 - 1) - 2a^2 y(x) y'(x)^2 y''(x) = 0$$

X Mathematica : cpu = 300.107 (sec), leaf count = 0 , timed out

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✓ Maple : cpu = 4.19 (sec), leaf count = 145

$$\left\{ \begin{array}{l} y(x) = -C1, y(x) = b \left(e^{-\frac{C2+x}{b} \sqrt{-C1^2 a^2 - 1}} - C1 \right) \frac{1}{\sqrt{-C1^2 a^2 - 1}}, y(x) = \frac{b}{a} \tan \left(\frac{-C1 - x \sqrt{a^2}}{ab} \right) \sqrt{\tan} \end{array} \right.$$

2.1834 ODE No. 1834

$$(x^2 y(x) y''(x) + x^2 (-y'(x)^2) + y(x)^2)^2 - 4xy(x) (xy'(x) - y(x))^3 = 0$$

X Mathematica : cpu = 16.6105 (sec), leaf count = 0 , could not solve

`DSolve[-4*x*y[x]*(-y[x] + x*Derivative[1][y][x])^3 + (y[x]^2 - x^2*Derivative[1][y][x])^2]`

✓ Maple : cpu = 0.839 (sec), leaf count = 86

$$\left\{ y(x) = ODESolStruc \left(e^{\int -b(-a) d_a + C1}, \left[\left\{ \frac{d}{d_a} b(-a) = 2 \frac{\sqrt{-a} (-b(-a) - a - 1) - b(-a)}{-a} - \frac{1}{-a^2} \right\} \right] \right) \right.$$

2.1835 ODE No. 1835

$$32y''(x) (xy''(x) - y'(x))^3 + (2y(x)y''(x) - y'(x)^2)^3 = 0$$

✓ Mathematica : cpu = 0.116191 (sec), leaf count = 143

$$\left\{ \left\{ y(x) \rightarrow \frac{1}{4} \left(-\frac{8c_1^3}{\sqrt[3]{3} \sqrt[3]{\sqrt{3} \sqrt{27c_1^{10} c_2^{10} - 64c_1^9 c_2^9 - 9c_1^5 c_2^5}}} + \frac{c_1^2}{c_2} - \frac{2 \sqrt[3]{\sqrt{3} \sqrt{27c_1^{10} c_2^{10} - 64c_1^9 c_2^9 - 9c_1^5 c_2^5}}}{3^{2/3} c_2^3} \right) x^2 + \right. \right.$$

X Maple : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.1836 ODE No. 1836

$$\sqrt{ay''(x)^2 + by'(x)^2} + cy(x)y''(x) + dy'(x)^2 = 0$$

✗ **Mathematica** : cpu = 14.5977 (sec), leaf count = 0 , could not solve

`DSolve[d*Derivative[1][y][x]^2 + c*y[x]*Derivative[2][y][x] + Sqrt[b*Derivative[1][y][x]^2 + a*y[x]^2], y[x], x]`

✓ **Maple** : cpu = 1.194 (sec), leaf count = 94

$$\left\{ y(x) = ODESolStruc\left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) b(-a) + \frac{-b(-a)}{c^2 a^2 - a} \left(-a c d b(-a) - \sqrt{-a^2 b c^2 + (-b(-a))^2} \right) \right] \right)$$

2.1837 ODE No. 1837

$$y^{(3)}(x) - a^2(y'(x)^5 + 2y'(x)^3 + y'(x)) = 0$$

✗ **Mathematica** : cpu = 10.8654 (sec), leaf count = 0 , could not solve

`DSolve[-(a^2*(Derivative[1][y][x]^5 + 2*Derivative[1][y][x]^3 + Derivative[1][y][x]))], y[x], x]`

✓ **Maple** : cpu = 0.731 (sec), leaf count = 95

$$\left\{ y(x) = \int \text{RootOf}\left(-3 \int^{-z} \frac{1}{\sqrt{3 f^6 a^2 + 9 f^4 a^2 + 9 f^2 a^2 + 9 C1}} d_f + x + C2\right) dx + C3, y(x) \right\}$$

2.1838 ODE No. 1838

$$y^{(3)}(x) + y(x)y''(x) - y'(x)^2 + 1 = 0$$

✗ **Mathematica** : cpu = 0.0330953 (sec), leaf count = 0 , could not solve

`DSolve[1 - Derivative[1][y][x]^2 + y[x]*Derivative[2][y][x] + Derivative[3][y][x] == 0], y[x], x]`

✓ **Maple** : cpu = 0.924 (sec), leaf count = 73

$$\left\{ y(x) = ODESolStruc\left(-a, \left[\left(\frac{d^2}{d_a^2} b(-a) \right) (b(-a))^2 + \left(\frac{d}{d_a} b(-a) \right)^2 b(-a) + \left(\frac{d}{d_a} b(-a) \right) \right] \right)$$

2.1839 ODE No. 1839

$$y^{(3)}(x) - y(x)y''(x) + y'(x)^2 = 0$$

✗ **Mathematica** : cpu = 0.0296948 (sec), leaf count = 0 , could not solve

DSolve[Derivative[1][y][x]^2 - y[x]*Derivative[2][y][x] + Derivative[3][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 1.214 (sec), leaf count = 125

$$\left\{ y(x) = ODESolStruc \left(e^{\int -g(_f) d_f + C_2}, \left[\left\{ \frac{d}{d_f} - g(_f) = (6_f - 1) (_g(_f))^3 + \frac{(7_f - 1) (_g(_f))}{_f} \right. \right. \right. \right.$$

2.1840 ODE No. 1840

$$ay(x)y''(x) + y^{(3)}(x) = 0$$

✗ **Mathematica** : cpu = 0.0269833 (sec), leaf count = 0 , could not solve

DSolve[a*y[x]*Derivative[2][y][x] + Derivative[3][y][x] == 0, y[x], x]

✓ **Maple** : cpu = 1.266 (sec), leaf count = 127

$$\left\{ y(x) = ODESolStruc \left(e^{\int -g(_f) d_f + C_2}, \left[\left\{ \frac{d}{d_f} - g(_f) = (6_f + 2a) (_g(_f))^3 + \frac{(7_f + a) (_g(_f))}{_f} \right. \right. \right. \right.$$

2.1841 ODE No. 1841

$$-f(x) + x^2y^{(3)}(x) + xy''(x) + (2xy(x) - 1)y'(x) + y(x)^2 = 0$$

✗ **Mathematica** : cpu = 0.0868286 (sec), leaf count = 0 , could not solve

DSolve[-f[x] + y[x]^2 + (-1 + 2*x*y[x])*Derivative[1][y][x] + x*Derivative[2][y][x] +

✓ **Maple** : cpu = 0.534 (sec), leaf count = 60

$$\left\{ y(x) = ODESolStruc \left(-b(_a), \left[\left\{ -a^2 \frac{d^2}{d_a^2} - b(_a) + _a (_b(_a))^2 - _a \frac{d}{d_a} - b(_a) - \int f(_a) d_a \right. \right. \right. \right.$$

2.1842 ODE No. 1842

$$x^2 y^{(3)}(x) + x(y(x) - 1)y''(x) + xy'(x)^2 + (1 - y(x))y'(x) = 0$$

✓ **Mathematica** : cpu = 0.165997 (sec), leaf count = 286

$$\left\{ \left\{ y(x) \rightarrow \frac{2x \left(c_3 \left(J_{\frac{\sqrt{c_2+2}}{\sqrt{2}}} \left(-\frac{1}{2}ix\sqrt{c_1} \right) - \frac{1}{4}i\sqrt{c_1}x \left(J_{\frac{\sqrt{c_2+2}}{\sqrt{2}}-1} \left(-\frac{1}{2}ix\sqrt{c_1} \right) - J_{\frac{\sqrt{c_2+2}}{\sqrt{2}}+1} \left(-\frac{1}{2}ix\sqrt{c_1} \right) \right) \right) + Y_{\frac{\sqrt{c_2+2}}{\sqrt{2}}}}{c_3 x J_{\frac{\sqrt{c_2+2}}{\sqrt{2}}} \left(-\frac{1}{2}ix\sqrt{c_1} \right) + x Y_{\frac{\sqrt{c_2+2}}{\sqrt{2}}}} \right. \right.$$

✓ **Maple** : cpu = 0.995 (sec), leaf count = 190

$$\left\{ \ln(x) + 2 \int^{y(x)} \left(2 \left(\text{RootOf} \left(-2 Y_{1/2\sqrt{4+CI}} \left(1/2\sqrt{2}_Z \right) \sqrt{4+CI} C2 + 2 Y_{1/2\sqrt{4+CI}} \left(1/2\sqrt{2}_Z \right) \right) \right) \right.$$

2.1843 ODE No. 1843

$$y^{(3)}(x)y(x) + y(x)^3 y'(x) - y'(x)y''(x) = 0$$

✓ **Mathematica** : cpu = 2.87632 (sec), leaf count = 409

$$\left\{ \left\{ y(x) \rightarrow \text{InverseFunction} \left[\frac{2i \sqrt{\frac{\#1^2}{2(\sqrt{c_2^2-c_1-c_2})} + 1} \sqrt{1 - \frac{\#1^2}{2(c_2 + \sqrt{c_2^2-c_1})}} F \left(i \sinh^{-1} \left(\frac{\sqrt{\frac{1}{\sqrt{c_2^2-c_1-c_2}} \#1}}{\sqrt{2}} \right) \right) \frac{c_2}{c_2}}{\sqrt{\frac{1}{\sqrt{c_2^2-c_1-c_2}}} \sqrt{-\frac{\#1^4}{2} + 2\#1^2 c_2 - 2c_1}} \right] \right. \right.$$

✓ **Maple** : cpu = 0.716 (sec), leaf count = 77

$$\left\{ \int^{y(x)} -2 \frac{1}{\sqrt{-a^4 + 4 C2 a^2 - 4 C2^2 + 4 C1}} d_a - x - C3 = 0, \int^{y(x)} 2 \frac{1}{\sqrt{-a^4 + 4 C2 a^2}}$$

2.1844 ODE No. 1844

$$4y(x)^2y^{(3)}(x) + 15y'(x)^3 - 18y(x)y'(x)y''(x) = 0$$

✗ **Mathematica** : cpu = 0.0740069 (sec), leaf count = 0 , could not solve

DSolve[15*Derivative[1][y][x]^3 - 18*y[x]*Derivative[1][y][x]*Derivative[2][y][x] + 4*

✓ **Maple** : cpu = 0.67 (sec), leaf count = 26

$$\left\{ y(x) = \frac{-C3}{(-C2^2 - 2C2x - x^2 + 4C1)^2} \right\}$$

2.1845 ODE No. 1845

$$9y(x)^2y^{(3)}(x) + 40y'(x)^3 - 45y(x)y'(x)y''(x) = 0$$

✗ **Mathematica** : cpu = 0.0746648 (sec), leaf count = 0 , could not solve

DSolve[40*Derivative[1][y][x]^3 - 45*y[x]*Derivative[1][y][x]*Derivative[2][y][x] + 9*

✓ **Maple** : cpu = 0.609 (sec), leaf count = 22

$$\left\{ y(x) = -C3(-C2^2 + 2C2x + x^2 - 9C1)^{-\frac{3}{2}} \right\}$$

2.1846 ODE No. 1846

$$2y^{(3)}(x)y'(x) - 3y'(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.041707 (sec), leaf count = 51

$$\left\{ \left\{ y(x) \rightarrow c_1 \right\}, \left\{ y(x) \rightarrow \sqrt{\frac{2}{3}} e^{-\sqrt{\frac{3}{2}}x} (c_1 e^{\sqrt{6}x} - c_2) + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.013 (sec), leaf count = 28

$$\left\{ y(x) = -C1, y(x) = -C1 + -C2 e^{\frac{\sqrt{6}x}{2}} + -C3 e^{-\frac{\sqrt{6}x}{2}} \right\}$$

2.1850 ODE No. 1850

$$y^{(4)}(x)y'(x) - y^{(3)}(x)y''(x) + y^{(3)}(x)y'(x)^3 = 0$$

✗ **Mathematica** : cpu = 0.0834192 (sec), leaf count = 0 , could not solve

`DSolve[Derivative[1][y][x]^3*Derivative[3][y][x] - Derivative[2][y][x]*Derivative[3][y][x]`

✓ **Maple** : cpu = 1.853 (sec), leaf count = 163

$$\left\{ y(x) = ODESolStruc \left(\int \frac{-j(-h)}{e^{f_{-j(-h)}d_{-h} + C2_{-h}}} d_{-h} + C3, \left[\frac{d}{d_{-h}} - j(-h) = (12_{-h} + 3) (-j(-h))^3 + \dots \right] \right. \right.$$

2.1851 ODE No. 1851

$$y'(x)^3 (f'(x)y'(x) + f(x)y''(x)) - y''(x) (f''(x)y'(x) + 2f'(x)y''(x) + f(x)y^{(3)}(x)) + y'(x) (f^{(3)}(x)y'(x) + 3f''(x)y''(x) + f'(x)y^{(3)}(x)) = 0$$

✗ **Mathematica** : cpu = 0.841413 (sec), leaf count = 0 , could not solve

`DSolve[2*q[x]*Sin[y[x]]*Derivative[1][y][x]^2 + Derivative[1][y][x]^3*(Derivative[1][f][x] + Derivative[1][q][x]*Derivative[1][y][x]) + q[x]*Derivative[2][y][x]) - Derivative[2][f][x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve(diff(y(x),x)*(diff(diff(diff(f(x),x),x),x)*diff(y(x),x)+3*diff(diff(f(x),x),x)*diff(y(x),x)+diff(diff(y(x),x),x)*f*diff(diff(diff(y(x),x),x),x)+diff(y(x),x)^3*(diff(f(x),x)*diff(y(x),x)+diff(q(x),x)*diff(y(x),x))*cos(y(x)))=0,y(x))`

2.1852 ODE No. 1852

$$3y^{(4)}(x)y''(x) - 5y^{(3)}(x)^2 = 0$$

✓ **Mathematica** : cpu = 0.0343404 (sec), leaf count = 28

$$\left\{ \left\{ y(x) \rightarrow c_2(-\sqrt{3c_1 + 2x}) + c_4x + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.687 (sec), leaf count = 30

$$\left\{ y(x) = 3(-C2 + x)\sqrt{6}C1^2\sqrt{-\frac{-C1}{-C2 + x}} + C3x + C4 \right\}$$

2.1853 ODE No. 1853

$$40y^{(3)}(x)^3 + 9y^{(5)}(x)y''(x)^2 - 45y^{(4)}(x)y^{(3)}(x)y''(x) = 0$$

✗ **Mathematica** : cpu = 0.0724869 (sec), leaf count = 0 , could not solve

`DSolve[40*Derivative[3][y][x]^3 - 45*Derivative[2][y][x]*Derivative[3][y][x]*Derivative[5][y][x], y[x], x]`

✓ **Maple** : cpu = 1.072 (sec), leaf count = 110

$$\left\{ y(x) = \iint \text{RootOf} \left(- \int^{-Z} \left(\text{RootOf} \left(-20 \ln(_f) + \int^{-Z} _k \left(e^{\text{RootOf}(81_k^2 e^{-Z} - 40 e^{-Z} \ln(2) - 20 e^{-Z} \ln(5) + 20 e^{-Z} \ln(5) + 20 e^{-Z} \ln(5))} \right) \right) \right) \right) \right.$$

2.1854 ODE No. 1854

$$y^{(n)}(x) - f(y^{(n-1)}(x)) = 0$$

✗ **Mathematica** : cpu = 0.0884637 (sec), leaf count = 0 , could not solve

`DSolve[-f[Derivative[-1 + n][y][x]] + Derivative[n][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

unable to handle ODEs of undefined differential order

2.1855 ODE No. 1855

$$y^{(n)}(x) - f(y^{(n-2)}(x)) = 0$$

✗ **Mathematica** : cpu = 0.0274546 (sec), leaf count = 0 , could not solve

`DSolve[-f[Derivative[-2 + n][y][x]] + Derivative[n][y][x] == 0, y[x], x]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

unable to handle ODEs of undefined differential order

2.1856 ODE No. 1856

$$\{x'(t) = ax(t), y'(t) = b\}$$

✓ **Mathematica** : cpu = 0.00576227 (sec), leaf count = 22

$$\{\{x(t) \rightarrow c_1 e^{at}, y(t) \rightarrow bt + c_2\}\}$$

✓ **Maple** : cpu = 0.048 (sec), leaf count = 19

$$\{\{x(t) = _C1 e^{at}, y(t) = bt + _C2\}\}$$

2.1857 ODE No. 1857

$$\{x'(t) = ay(t), y'(t) = -ax(t)\}$$

✓ **Mathematica** : cpu = 0.0358411 (sec), leaf count = 39

$$\{\{x(t) \rightarrow c_2 \sin(at) + c_1 \cos(at), y(t) \rightarrow c_2 \cos(at) - c_1 \sin(at)\}\}$$

✓ **Maple** : cpu = 0.045 (sec), leaf count = 35

$$\{\{x(t) = _C1 \sin(at) + _C2 \cos(at), y(t) = \cos(at) _C1 - \sin(at) _C2\}\}$$

2.1858 ODE No. 1858

$$\{x'(t) = ay(t), y'(t) = bx(t)\}$$

✓ **Mathematica** : cpu = 0.0104078 (sec), leaf count = 182

$$\left\{ \left\{ x(t) \rightarrow \frac{1}{2} c_1 e^{-\sqrt{a}\sqrt{bt}} (e^{2\sqrt{a}\sqrt{bt}} + 1) + \frac{\sqrt{a} c_2 e^{-\sqrt{a}\sqrt{bt}} (e^{2\sqrt{a}\sqrt{bt}} - 1)}{2\sqrt{b}}, y(t) \rightarrow \frac{\sqrt{b} c_1 e^{-\sqrt{a}\sqrt{bt}} (e^{2\sqrt{a}\sqrt{bt}} - 1)}{2\sqrt{a}} + \right. \right.$$

✓ **Maple** : cpu = 0.049 (sec), leaf count = 64

$$\left. \left\{ \left\{ x(t) = _C1 e^{\sqrt{a}\sqrt{bt}} + _C2 e^{-\sqrt{a}\sqrt{bt}}, y(t) = 1\sqrt{b} (_C1 e^{\sqrt{a}\sqrt{bt}} - _C2 e^{-\sqrt{a}\sqrt{bt}}) \frac{1}{\sqrt{a}} \right\} \right\}$$

2.1859 ODE No. 1859

$$\{x'(t) = ax(t) - y(t), y'(t) = ay(t) + x(t)\}$$

✓ **Mathematica** : cpu = 0.00576963 (sec), leaf count = 51

$$\{\{x(t) \rightarrow c_1 e^{at} \cos(t) - c_2 e^{at} \sin(t), y(t) \rightarrow c_1 e^{at} \sin(t) + c_2 e^{at} \cos(t)\}\}$$

✓ **Maple** : cpu = 0.035 (sec), leaf count = 38

$$\{\{x(t) = e^{at} (_C2 \cos(t) + _C1 \sin(t)), y(t) = -e^{at} (\cos(t) _C1 - \sin(t) _C2)\}\}$$

2.1860 ODE No. 1860

$$\{x'(t) = ax(t) + by(t), y'(t) = by(t) + cx(t)\}$$

✓ **Mathematica** : cpu = 0.0462278 (sec), leaf count = 696

$$\left\{ \left\{ x(t) \rightarrow \frac{c_1 \left(a \left(-e^{\frac{1}{2}t(-\sqrt{a^2-2ab+b^2+4bc+a+b})} \right) + ae^{\frac{1}{2}t(\sqrt{a^2-2ab+b^2+4bc+a+b})} + be^{\frac{1}{2}t(-\sqrt{a^2-2ab+b^2+4bc+a+b})} + \dots \right. \right. \right.$$

✓ **Maple** : cpu = 0.072 (sec), leaf count = 237

$$\left\{ \left\{ x(t) = _C1 e^{\frac{t}{2}(a+b+\sqrt{a^2-2ab+b^2+4bc})} + _C2 e^{-\frac{t}{2}(-a-b+\sqrt{a^2-2ab+b^2+4bc})}, y(t) = \left(\frac{1}{2} + \frac{1}{b} \left(\frac{1}{2} \sqrt{a^2-2ab+b^2+4bc} \right) \right) \dots \right. \right.$$

2.1861 ODE No. 1861

$$\{ax'(t) + by'(t) = \alpha x(t) + \beta y(t), bx'(t) - ay'(t) = \beta x(t) - \alpha y(t)\}$$

✓ **Mathematica** : cpu = 0.0116781 (sec), leaf count = 183

$$\left\{ \left\{ x(t) \rightarrow c_2 e^{\frac{t(a\alpha+b\beta)}{a^2+b^2}} \sin\left(\frac{t(a\beta-\alpha b)}{a^2+b^2}\right) + c_1 e^{\frac{t(a\alpha+b\beta)}{a^2+b^2}} \cos\left(\frac{t(a\beta-\alpha b)}{a^2+b^2}\right), y(t) \rightarrow c_2 e^{\frac{t(a\alpha+b\beta)}{a^2+b^2}} \cos\left(\frac{t(a\beta-\alpha b)}{a^2+b^2}\right) \dots \right. \right.$$

✓ **Maple** : cpu = 0.102 (sec), leaf count = 144

$$\left\{ \left\{ x(t) = _C1 e^{\frac{(i a \beta - i \alpha b + a \alpha + b \beta) t}{a^2 + b^2}} + _C2 e^{-\frac{(i a \beta - i \alpha b - a \alpha - b \beta) t}{a^2 + b^2}}, y(t) = i \left(_C1 e^{\frac{(i a \beta - i \alpha b + a \alpha + b \beta) t}{a^2 + b^2}} - _C2 e^{-\frac{(i a \beta - i \alpha b - a \alpha - b \beta) t}{a^2 + b^2}} \right) \dots \right. \right.$$

2.1862 ODE No. 1862

$$\{x'(t) = -y(t), y'(t) = 2x(t) + 2y(t)\}$$

✓ **Mathematica** : cpu = 0.111034 (sec), leaf count = 52

$$\left\{ \left\{ x(t) \rightarrow c_1 e^t (\cos(t) - \sin(t)) - c_2 e^t \sin(t), y(t) \rightarrow 2c_1 e^t \sin(t) + c_2 e^t (\sin(t) + \cos(t)) \right\} \right\}$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 42

$$\left\{ \left\{ x(t) = e^t (\cos(t) _C2 + \sin(t) _C1), y(t) = -e^t (\cos(t) _C1 + \cos(t) _C2 + \sin(t) _C1 - \sin(t) _C2) \right\} \right\}$$

2.1863 ODE No. 1863

$$\{x'(t) + 3x(t) + 4y(t) = 0, 2x(t) + y'(t) + 5y(t) = 0\}$$

✓ **Mathematica** : cpu = 0.007311 (sec), leaf count = 84

$$\left\{ \left\{ x(t) \rightarrow \frac{1}{3}c_1 e^{-7t}(2e^{6t} + 1) - \frac{2}{3}c_2 e^{-7t}(e^{6t} - 1), y(t) \rightarrow \frac{1}{3}c_2 e^{-7t}(e^{6t} + 2) - \frac{1}{3}c_1 e^{-7t}(e^{6t} - 1) \right\} \right\}$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 35

$$\left\{ \left\{ x(t) = _C1 e^{-7t} + _C2 e^{-t}, y(t) = _C1 e^{-7t} - \frac{C2 e^{-t}}{2} \right\} \right\}$$

2.1864 ODE No. 1864

$$\{x'(t) = -5x(t) - 2y(t), y'(t) = x(t) - 7y(t)\}$$

✓ **Mathematica** : cpu = 0.0126829 (sec), leaf count = 59

$$\left\{ \left\{ x(t) \rightarrow c_1 e^{-6t}(\sin(t) + \cos(t)) - 2c_2 e^{-6t} \sin(t), y(t) \rightarrow c_1 e^{-6t} \sin(t) + c_2 e^{-6t}(\cos(t) - \sin(t)) \right\} \right\}$$

✓ **Maple** : cpu = 0.038 (sec), leaf count = 48

$$\left\{ \left\{ x(t) = e^{-6t}(\cos(t) _C2 + \sin(t) _C1), y(t) = -\frac{e^{-6t}(\cos(t) _C1 - \cos(t) _C2 - \sin(t) _C1 - \sin(t) _C2)}{2} \right\} \right\}$$

2.1865 ODE No. 1865

$$\{x'(t) = a1x(t) + b1y(t) + c1, y'(t) = a2x(t) + b2y(t) + c2\}$$

✓ **Mathematica** : cpu = 1.1866 (sec), leaf count = 2062

$$\left\{ \left\{ x(t) \rightarrow -\frac{b1 e^{-\frac{1}{2}(a1+b2+\sqrt{a1^2-2b2a1+b2^2+4a2b1})t} \left(\frac{2((a1-b2+\sqrt{a1^2-2b2a1+b2^2+4a2b1})c2-2a2c1) e^{\sqrt{a1^2-2b2a1+b2^2+4a2b1}t}}{-a1-b2+\sqrt{a1^2-2b2a1+b2^2+4a2b1}} \right) + \dots}{2(a1-b2+\sqrt{a1^2-2b2a1+b2^2+4a2b1})} \right\} \right\}$$

✓ **Maple** : cpu = 0.124 (sec), leaf count = 334

$$\left\{ \left\{ x(t) = e^{\left(\frac{a1}{2} + \frac{b2}{2} + \frac{1}{2}\sqrt{a1^2 - 2a1b2 + 4a2b1 + b2^2}\right)t} _C2 + e^{\left(\frac{a1}{2} + \frac{b2}{2} - \frac{1}{2}\sqrt{a1^2 - 2a1b2 + 4a2b1 + b2^2}\right)t} _C1 + \frac{b1c2 - c1}{a1b2 - a2} \right\} \right\}$$

2.1866 ODE No. 1866

$$\{x'(t) + 2y(t) = 3t, y'(t) - 2x(t) = 4\}$$

✓ **Mathematica** : cpu = 0.0294875 (sec), leaf count = 132

$$\left\{ \left\{ x(t) \rightarrow -c_2 \sin(2t) + c_1 \cos(2t) + \cos(2t) \left(\frac{3}{2}t \sin(2t) - \frac{5}{4} \cos(2t) \right) - \sin(2t) \left(\frac{5}{4} \sin(2t) + \frac{3}{2}t \cos(2t) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 39

$$\left\{ \left\{ x(t) = \sin(2t) _C2 + \cos(2t) _C1 - \frac{5}{4}, y(t) = -\cos(2t) _C2 + \sin(2t) _C1 + \frac{3t}{2} \right\} \right\}$$

2.1867 ODE No. 1867

$$\{-t^2 + x'(t) + y(t) + 6t + 1 = 0, y'(t) - x(t) = -3t^2 + 3t + 1\}$$

✓ **Mathematica** : cpu = 0.0826224 (sec), leaf count = 124

$$\left\{ \left\{ x(t) \rightarrow -c_2 \sin(t) + c_1 \cos(t) + \cos(t) \left((3t^2 - t - 13) \cos(t) + (t - 12)t \sin(t) \right) - \sin(t) \left((-3t^2 + t + 13) \sin(t) + (t - 12)t \cos(t) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.034 (sec), leaf count = 42

$$\left\{ \left\{ x(t) = \sin(t) _C2 + \cos(t) _C1 + 3t^2 - t - 13, y(t) = t^2 - \cos(t) _C2 + \sin(t) _C1 - 12t \right\} \right\}$$

2.1868 ODE No. 1868

$$\{x'(t) + 3x(t) - y(t) = e^{2t}, x(t) + y'(t) + 5y(t) = e^t\}$$

✓ **Mathematica** : cpu = 0.0460988 (sec), leaf count = 162

$$\left\{ \left\{ x(t) \rightarrow c_1 e^{-4t} (t + 1) + c_2 e^{-4t} t - e^t (t + 1) \left(\frac{t}{5} + \frac{1}{36} e^t (6t - 7) - \frac{1}{25} \right) + e^t t \left(\frac{t}{5} + \frac{1}{36} e^t (6t - 1) + \frac{4}{25} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.067 (sec), leaf count = 64

$$\left\{ \left\{ x(t) = e^{-4t} _C2 + e^{-4t} t _C1 + \frac{7e^{2t}}{36} + \frac{e^t}{25}, y(t) = -\frac{e^{2t}}{36} - e^{-4t} _C2 - e^{-4t} t _C1 + e^{-4t} _C1 + \frac{4e^t}{25} \right\} \right\}$$

2.1869 ODE No. 1869

$$\{x'(t) + 2x(t) + y'(t) + y(t) = t + e^{2t}, x'(t) - x(t) + y'(t) + 3y(t) = e^t - 1\}$$

✓ **Mathematica** : cpu = 0.124556 (sec), leaf count = 118

$$\left\{ \left\{ x(t) \rightarrow \frac{5}{72} \left(c_1 e^{-7t/5} + \frac{12(5712t + 833e^t + 2352e^{2t} - 5508)}{20825} \right) + \frac{1}{5}(t - e^t + e^{2t} + 1), y(t) \rightarrow \frac{5}{48} \left(c_1 e^{-7t/5} \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.055 (sec), leaf count = 51

$$\left\{ \left\{ x(t) = \frac{5e^{2t}}{17} - \frac{e^t}{6} + \frac{3t}{7} - \frac{1}{49} + e^{-\frac{7t}{5}} - C1, y(t) = -\frac{e^{2t}}{17} + \frac{e^t}{4} + \frac{t}{7} - \frac{26}{49} + \frac{3-C1}{2} e^{-\frac{7t}{5}} \right\} \right\}$$

2.1870 ODE No. 1870

$$\{x'(t) + y'(t) - y(t) = e^t, 2x'(t) + y'(t) + 2y(t) = \cos(t)\}$$

✓ **Mathematica** : cpu = 0.128211 (sec), leaf count = 122

$$\left\{ \left\{ x(t) \rightarrow -\frac{3}{4}c_2(e^{4t} - 1) + c_1 + \frac{1}{68}e^{-4t}(e^{4t} - 1)(34e^t + 3\sin(t) - 12\cos(t)) + \frac{1}{4}(2e^{-3t} + 2e^t + \frac{3}{17}e^{-4t}) \right\} \right\}$$

✓ **Maple** : cpu = 0.101 (sec), leaf count = 47

$$\left\{ \left\{ x(t) = e^t + \frac{5\sin(t)}{17} - \frac{3\cos(t)}{17} + \frac{e^{4t}-C1}{4} + C2, y(t) = -\frac{2e^t}{3} + \frac{4\cos(t)}{17} - \frac{\sin(t)}{17} - \frac{e^{4t}-C1}{3} \right\} \right\}$$

2.1871 ODE No. 1871

$$\{4x'(t) + 2x(t) + 9y'(t) + 31y(t) = e^t, 3x'(t) + x(t) + 7y'(t) + 24y(t) = 3\}$$

✓ **Mathematica** : cpu = 0.163209 (sec), leaf count = 180

$$\left\{ \left\{ x(t) \rightarrow -c_2 e^{-4t} \sin(t) + c_1 e^{-4t} (\cos(t) - \sin(t)) + \frac{1}{442} (3(153e^t - 754) \sin(t) + 31(17e^t - 78) \cos(t)) \right\} \right\}$$

✓ **Maple** : cpu = 0.068 (sec), leaf count = 71

$$\left\{ \left\{ x(t) = e^{-4t} \sin(t) - C2 + e^{-4t} \cos(t) - C1 - \frac{93}{17} + \frac{31e^t}{26}, y(t) = -e^{-4t} \sin(t) - C2 - e^{-4t} \cos(t) - C2 \right\} \right\}$$

2.1872 ODE No. 1872

$$\{4x'(t) + 11x(t) + 9y'(t) + 31y(t) = e^t, 3x'(t) + 8x(t) + 7y'(t) + 24y(t) = e^{2t}\}$$

✓ **Mathematica** : cpu = 0.0592684 (sec), leaf count = 162

$$\left\{ \left\{ x(t) \rightarrow -c_1 e^{-4t} (t-1) - c_2 e^{-4t} t - e^{2t} \left(-\frac{4t}{5} + \frac{1}{36} e^t (30t+19) - \frac{11}{25} \right) - e^t (t-1) \left(\frac{4t}{5} - \frac{1}{36} e^t (30t+49) \right) \right. \right.$$

✓ **Maple** : cpu = 0.059 (sec), leaf count = 65

$$\left\{ \left\{ x(t) = e^{-4t} _C2 + e^{-4t} t _C1 - \frac{49 e^{2t}}{36} + \frac{31 e^t}{25}, y(t) = \frac{19 e^{2t}}{36} - \frac{11 e^t}{25} - e^{-4t} _C2 - e^{-4t} t _C1 - e^{-4t} \right. \right.$$

2.1873 ODE No. 1873

$$\{4x'(t) + 44x(t) + 9y'(t) + 49y(t) = t, 3x'(t) + 34x(t) + 7y'(t) + 38y(t) = e^t\}$$

✓ **Mathematica** : cpu = 0.0446275 (sec), leaf count = 322

$$\left\{ \left\{ x(t) \rightarrow \frac{1}{5} c_1 e^{-6t} (4e^{5t} + 1) - \frac{1}{5} c_2 e^{-6t} (e^{5t} - 1) - \frac{1}{5} e^{-6t} (e^{5t} - 1) \left(\frac{16}{5} e^{6t} \left(\frac{t}{6} - \frac{1}{36} \right) + 4e^{2t} - \frac{4e^{7t}}{7} - \frac{31}{5} e^t \right) \right. \right.$$

✓ **Maple** : cpu = 0.056 (sec), leaf count = 52

$$\left\{ \left\{ x(t) = e^{-6t} _C2 + e^{-t} _C1 - \frac{56}{9} + \frac{19t}{3} - \frac{29 e^t}{7}, y(t) = 4 e^{-6t} _C2 - e^{-t} _C1 + \frac{55}{9} + \frac{24 e^t}{7} - \frac{17t}{3} \right. \right\}$$

2.1874 ODE No. 1874

$$\{x'(t) = f(t)x(t) + g(t)y(t), y'(t) = f(t)y(t) - g(t)x(t)\}$$

✓ **Mathematica** : cpu = 0.138726 (sec), leaf count = 131

$$\left\{ \left\{ x(t) \rightarrow c_2 e^{\text{Integrate}[f(K[2]),\{K[2],1,t\},\text{Assumptions} \rightarrow \text{True}]} \sin(\text{Integrate}[g(K[1]),\{K[1],1,t\},\text{Assumptions} \rightarrow \text{True}]} \right. \right.$$

✓ **Maple** : cpu = 0.407 (sec), leaf count = 57

$$\left\{ \left\{ x(t) = e^{\int \tan(-C1 - \int g(t) dt) g(t) + f(t) dt} _C2, y(t) = \tan \left(-C1 - \int g(t) dt \right) e^{\int \tan(-C1 - \int g(t) dt) g(t) + f(t) dt} _C2 \right. \right.$$

2.1875 ODE No. 1875

$$\{f(t)(ax(t) + by(t)) + x'(t) = g(t), f(t)(cx(t) + dy(t)) + y'(t) = h(t)\}$$

✗ **Mathematica** : cpu = 0.00708861 (sec), leaf count = 0 , could not solve

DSolve[{f[t]*(a*x[t] + b*y[t]) + Derivative[1][x][t] == g[t], f[t]*(c*x[t] + d*y[t]) +

✓ **Maple** : cpu = 0.918 (sec), leaf count = 1633

$$\left\{ \left\{ x(t) = 1 \left(e^{\frac{1}{2da-2bc} \int f(t)\sqrt{-da+bc} dt} \left(\sqrt{\frac{-a^2+2da-4bc-d^2}{da-bc}} (da-bc) + (a+d)\sqrt{-da+bc} \right) - C2 \sqrt{-\frac{a^2-2da+4bc+d^2}{da-bc}} \right) \right. \right.$$

2.1876 ODE No. 1876

$$\{x'(t) = x(t) \cos(t), y'(t) = x(t)e^{-\sin(t)}\}$$

✓ **Mathematica** : cpu = 0.10518 (sec), leaf count = 41

$$\{\{x(t) \rightarrow c_1 e^{\sin(t)}, y(t) \rightarrow c_1 \text{Integrate}[e^{\sin(K[1])-\sin(K[1])}, \{K[1], 1, t\}, \text{Assumptions} \rightarrow \text{True}] + c_2\}\}$$

✓ **Maple** : cpu = 0.125 (sec), leaf count = 18

$$\{\{x(t) = _C2 e^{\sin(t)}, y(t) = _C2 t + _C1\}\}$$

2.1877 ODE No. 1877

$$\{tx'(t) + y(t) = 0, x(t) + ty'(t) = 0\}$$

✓ **Mathematica** : cpu = 0.00539237 (sec), leaf count = 31

$$\left\{ \left\{ x(t) \rightarrow c_1 t + \frac{c_2}{t}, y(t) \rightarrow \frac{c_2}{t} - c_1 t \right\} \right\}$$

✓ **Maple** : cpu = 0.032 (sec), leaf count = 33

$$\left\{ \left\{ x(t) = \frac{-C1 t^2 + -C2}{t}, y(t) = -\frac{C1 t^2 - -C2}{t} \right\} \right\}$$

2.1878 ODE No. 1878

$$\{tx'(t) + 2x(t) = t, -(t+2)x(t) + ty'(t) - ty(t) = -t\}$$

✓ **Mathematica** : cpu = 0.0119373 (sec), leaf count = 39

$$\left\{ \left\{ x(t) \rightarrow \frac{c_1}{t^2} + \frac{t}{3}, y(t) \rightarrow -\frac{c_1}{t^2} + c_2 e^t - \frac{t}{3} \right\} \right\}$$

✓ **Maple** : cpu = 0.049 (sec), leaf count = 39

$$\left\{ \left\{ x(t) = \frac{t}{3} + \frac{C2}{t^2}, y(t) = \frac{3_C1 e^t t^2 - t^3 - 3_C2}{3 t^2} \right\} \right\}$$

2.1879 ODE No. 1879

$$\{tx'(t) + 2(x(t) - y(t)) = t, x(t) + ty'(t) + 5y(t) = t^2\}$$

✓ **Mathematica** : cpu = 0.0345989 (sec), leaf count = 58

$$\left\{ \left\{ x(t) \rightarrow \frac{c_1}{t^4} + \frac{c_2}{t^3} + \frac{1}{30}t(2t+9), y(t) \rightarrow -\frac{c_1}{t^4} - \frac{c_2}{2t^3} + \frac{1}{60}t(8t-3) \right\} \right\}$$

✓ **Maple** : cpu = 0.048 (sec), leaf count = 54

$$\left\{ \left\{ x(t) = \frac{2t^6 + 9t^5 + 30_C1 t + 30_C2}{30 t^4}, y(t) = -\frac{-8t^6 + 3t^5 + 30_C1 t + 60_C2}{60 t^4} \right\} \right\}$$

2.1880 ODE No. 1880

$$\{t^2(1 - \sin(t))x'(t) = t^2y(t) + tx(t)(1 - 2\sin(t)), t^2(1 - \sin(t))y'(t) = x(t)(t \cos(t) - \sin(t)) + ty(t)(1 - \sin(t))\}$$

✗ **Mathematica** : cpu = 0.0206508 (sec), leaf count = 0 , could not solve

`DSolve[{t^2*(1 - Sin[t])*Derivative[1][x][t] == t*(1 - 2*Sin[t])*x[t] + t^2*y[t], t^2*(1 - Sin[t])*Derivative[1][y][t] == x[t]*(t Cos[t] - Sin[t]) + t*y[t]*(1 - Sin[t])}`

✓ **Maple** : cpu = 0.07 (sec), leaf count = 23

$$\{\{x(t) = t(_C2 t + _C1), y(t) = \sin(t)_C1 + _C2 t\}\}$$

2.1881 ODE No. 1881

$$\{x'(t) + y'(t) + y(t) = f(t), x''(t) + x(t) + y''(t) + y'(t) + y(t) = g(t)\}$$

✓ **Mathematica** : cpu = 0.0345631 (sec), leaf count = 44

$$\{\{x(t) \rightarrow -f''(t) - f'(t) - f(t) + g'(t) + g(t), y(t) \rightarrow f''(t) + f(t) - g'(t)\}\}$$

✓ **Maple** : cpu = 0.026 (sec), leaf count = 48

$$\left\{ \left\{ x(t) = -\frac{d}{dt}f(t) + g(t) - f(t) - \frac{d^2}{dt^2}f(t) + \frac{d}{dt}g(t), y(t) = f(t) + \frac{d^2}{dt^2}f(t) - \frac{d}{dt}g(t) \right\} \right\}$$

2.1882 ODE No. 1882

$$\{2x'(t) - 3x(t) + y'(t) = 0, x''(t) + y'(t) - 2y(t) = e^{2t}\}$$

✓ **Mathematica** : cpu = 0.442412 (sec), leaf count = 928

$$\left\{ \left\{ x(t) \rightarrow \frac{1}{46}e^{t/2}c_1 \left(23 \cos \left(\frac{\sqrt{23}t}{2} \right) + 23e^{t/2} - 3\sqrt{23} \sin \left(\frac{\sqrt{23}t}{2} \right) \right) + \frac{e^{3t/2} \left(23e^{t/2} \cos \left(\frac{\sqrt{23}t}{2} \right) - 7\sqrt{23} \right)}{46} \right\} \right\}$$

✓ **Maple** : cpu = 0.073 (sec), leaf count = 118

$$\left\{ \left\{ x(t) = \frac{e^{2t}}{4} + _C1 e^t + _C2 e^{\frac{t}{2}} \cos \left(\frac{\sqrt{23}t}{2} \right) + _C3 e^{\frac{t}{2}} \sin \left(\frac{\sqrt{23}t}{2} \right), y(t) = -\frac{e^{2t}}{8} + _C1 e^t - \frac{7_C2}{4} \right\} \right\}$$

2.1883 ODE No. 1883

$$\{x'(t) + x(t) - y'(t) = 2t, x''(t) - 9x(t) + y'(t) + 3y(t) = \sin(2t)\}$$

✓ **Mathematica** : cpu = 0.571992 (sec), leaf count = 614

$$\left\{ \left\{ x(t) \rightarrow \frac{1}{16}c_1 e^{-3t} (20e^{4t}t + 7e^{4t} + 9) + \frac{1}{16}c_2 e^{-3t} (4e^{4t}t + 3e^{4t} - 3) - \frac{3}{16}c_3 e^{-3t} (4e^{4t}t - e^{4t} + 1) + \frac{e^{-4t} (20e^{4t}t + 7e^{4t} + 9)}{16} \right\} \right\}$$

✓ **Maple** : cpu = 0.099 (sec), leaf count = 80

$$\left\{ \left\{ x(t) = -\frac{36 \sin(2t)}{325} - \frac{2 \cos(2t)}{325} + 4 + 2t + _C1 e^t + _C2 e^{-3t} + _C3 t e^t, y(t) = -\frac{37 \sin(2t)}{325} + \frac{1}{325} \right\} \right\}$$

2.1884 ODE No. 1884

$$\{x'(t) - x(t) + 2y(t) = 0, x''(t) - 2y'(t) = 2t - \cos(2t)\}$$

✓ **Mathematica** : cpu = 0.213617 (sec), leaf count = 226

$$\left\{ \left\{ x(t) \rightarrow 7 \left(c_2 + t^2 - \frac{1}{2} \sin(2t) \right) + 8 \left(c_1 e^{t/2} + c_2 (e^{t/2} - 1) + \frac{1}{68} e^{-t/2} (e^{t/2} \cos(2t) - 2(17(2e^{t/2}t^2 + e^{t/2} \cos(2t))) \right) \right\} \right\}$$

✓ **Maple** : cpu = 0.099 (sec), leaf count = 69

$$\left\{ \left\{ x(t) = \frac{\sin(2t)}{34} + \frac{2 \cos(2t)}{17} - t^2 + 2 e^{t/2} _C1 - 4t + _C2, y(t) = \frac{\cos(2t)}{34} + \frac{9 \sin(2t)}{68} - t + \frac{C1}{2} e^{t/2} \right\} \right\}$$

2.1885 ODE No. 1885

$$\{tx'(t) - ty'(t) - 2y(t) = 0, tx''(t) + 2x'(t) + tx(t) = 0\}$$

✗ **Mathematica** : cpu = 0.0331359 (sec), leaf count = 0 , could not solve

`DSolve[{-2*y[t] + t*Derivative[1][x][t] - t*Derivative[1][y][t] == 0, t*x[t] + 2*Derivative[2][x][t] == 0}, {x[t], y[t]}, t]`

✓ **Maple** : cpu = 0.081 (sec), leaf count = 47

$$\left\{ \left\{ x(t) = \frac{-C3 \cos(t) + \sin(t) _C2}{t}, y(t) = \frac{\cos(t) _C3 t + \sin(t) _C2 t + 2 \cos(t) _C2 - 2 _C3 \sin(t)}{t^2} \right\} \right\}$$

2.1886 ODE No. 1886

$$\{ay(t) + x''(t) = 0, y''(t) - a^2y(t) = 0\}$$

✓ **Mathematica** : cpu = 0.0204236 (sec), leaf count = 115

$$\left\{ \left\{ x(t) \rightarrow -\frac{c_4 e^{-at} (-2ate^{at} + e^{2at} - 1)}{2a^2} - \frac{c_3 e^{-at} (e^{at} - 1)^2}{2a} + c_2 t + c_1, y(t) \rightarrow \frac{1}{2} c_3 e^{-at} (e^{2at} + 1) + \frac{c_4 e^{-at}}{2} \right\} \right\}$$

✓ **Maple** : cpu = 0.057 (sec), leaf count = 50

$$\left\{ \left\{ x(t) = -\frac{_C1 ta + _C3 e^{-at} + _C4 e^{at} - _C2 a}{a}, y(t) = _C3 e^{-at} + _C4 e^{at} \right\} \right\}$$

2.1887 ODE No. 1887

$$\{x''(t) = ax(t) + by(t), y''(t) = cx(t) + dy(t)\}$$

✓ **Mathematica** : cpu = 0.532388 (sec), leaf count = 5748

$$\left\{ \left\{ x(t) \rightarrow \frac{e^{-\frac{\sqrt{a+d-\sqrt{a^2-2da+d^2+4bct}}{\sqrt{2}}}-\frac{\sqrt{a+d+\sqrt{a^2-2da+d^2+4bct}}{\sqrt{2}}}}{a-e^{-\frac{\sqrt{a+d-\sqrt{a^2-2da+d^2+4bct}}{\sqrt{2}}}}-e^{\frac{\sqrt{a+d+\sqrt{a^2-2da+d^2+4bct}}{\sqrt{2}}}}}{a-e^{\frac{\sqrt{a+d-\sqrt{a^2-2da+d^2+4bct}}{\sqrt{2}}}}-e^{-\frac{\sqrt{a+d+\sqrt{a^2-2da+d^2+4bct}}{\sqrt{2}}}}}} \right. \right.$$

✓ **Maple** : cpu = 0.127 (sec), leaf count = 418

$$\left\{ \left\{ x(t) = _C1 e^{-\frac{t}{2}\sqrt{-2\sqrt{a^2-2da+4bc+d^2}+2a+2d}} + _C2 e^{\frac{t}{2}\sqrt{-2\sqrt{a^2-2da+4bc+d^2}+2a+2d}} + _C3 e^{-\frac{t}{2}\sqrt{2\sqrt{a^2-2da+4bc+d^2}+2a+2d}} \right. \right.$$

2.1888 ODE No. 1888

$$\{x''(t) = a1x(t) + b1y(t) + c1, y''(t) = a2x(t) + b2y(t) + c2\}$$

✓ **Mathematica** : cpu = 24.0837 (sec), leaf count = 37858

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✓ **Maple** : cpu = 0.224 (sec), leaf count = 634

$$\left\{ \left\{ x(t) = _C4 e^{\frac{t}{2}\sqrt{2\sqrt{a1^2-2a1b2+4a2b1+b2^2}+2a1+2b2}} + _C3 e^{-\frac{t}{2}\sqrt{2\sqrt{a1^2-2a1b2+4a2b1+b2^2}+2a1+2b2}} + _C2 e^{\frac{t}{2}\sqrt{2\sqrt{a1^2-2a1b2+4a2b1+b2^2}+2a1+2b2}} \right. \right.$$

2.1889 ODE No. 1889

$$\{x''(t) + x(t) + y(t) = -5, -4x(t) + y''(t) - 3y(t) = -3\}$$

✓ **Mathematica** : cpu = 0.100417 (sec), leaf count = 554

$$\left\{ \left\{ x(t) \rightarrow -\frac{1}{4}c4e^{-t}(e^{2t}t + t - e^{2t} + 1) - \frac{1}{2}c1e^{-t}(e^{2t}t - t - e^{2t} - 1) - \frac{1}{2}c2e^{-t}(e^{2t}t + t - 2e^{2t} + 2) - \frac{1}{4}c3e^{-t} \right. \right.$$

✓ **Maple** : cpu = 0.043 (sec), leaf count = 72

$$\left\{ \left\{ x(t) = 18 + _C1 e^t + _C2 e^{-t} + _C3 te^t + _C4 e^{-t}t, y(t) = -2_C1 e^t - 2_C2 e^{-t} - 2_C3 e^t - 2_C4 e^{-t} \right. \right.$$

2.1890 ODE No. 1890

$$\left\{ \begin{aligned} x''(t) &= c^2 x(t) (3 \cos^2(at + b) - 1) + \frac{3}{2} c^2 y(t) \sin(2abt), \\ y''(t) &= \frac{3}{2} c^2 x(t) \sin(2abt) + c^2 y(t) (3 \sin^2(at + b) - 1) \end{aligned} \right.$$

✗ **Mathematica** : cpu = 0.00954992 (sec), leaf count = 0 , could not solve

`DSolve[{Derivative[2][x][t] == c^2*(-1 + 3*Cos[b + a*t]^2)*x[t] + (3*c^2*Sin[2*a*b*t]*y[t] - 1 + 3*Sin[b + a*t]^2)*y[t]}, {x[t], y[t]}, t]`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ \left\{ \begin{aligned} x(t) &= DESol \left(\left(\frac{d^4}{dt^4} - Y(t) + \left(2 \frac{\sin(atb) ab}{\cos(atb)} - 2 \frac{\cos(atb) ab}{\sin(atb)} \right) \frac{d^3}{dt^3} - Y(t) + \left(2 \frac{(\sin(atb))^2 a^2 b^2}{(\cos(atb))^2} + 2 \frac{\sin^2(atb) a^2 b^2}{\cos^2(atb)} \right) \frac{d^2}{dt^2} - Y(t) \right) \right. \end{aligned} \right. \right.$$

2.1891 ODE No. 1891

$$\{x''(t) + 6x(t) + 7y(t) = 0, 3x(t) + y''(t) + 2y(t) = 2t\}$$

✓ **Mathematica** : cpu = 0.431969 (sec), leaf count = 766

$$\left\{ \left\{ \begin{aligned} x(t) &\rightarrow -\frac{7}{60} c_4 e^{-t} (3e^{2t} - 2e^t \sin(3t) - 3) + \frac{1}{60} c_2 e^{-t} (9e^{2t} + 14e^t \sin(3t) - 9) - \frac{7}{20} c_3 e^{-t} (e^{2t} - 2e^t \cos(3t) - 1) \end{aligned} \right. \right.$$

✓ **Maple** : cpu = 0.048 (sec), leaf count = 64

$$\left\{ \left\{ \begin{aligned} x(t) &= \frac{14t}{9} + _C1 e^t + _C2 \cos(3t) + _C3 e^{-t} + _C4 \sin(3t), \\ y(t) &= -_C1 e^t + \frac{3_C2 \cos(3t)}{7} \end{aligned} \right. \right.$$

2.1892 ODE No. 1892

$$\{-ay'(t) + bx(t) + x''(t) = 0, ax'(t) + by(t) + y''(t) = 0\}$$

✓ **Mathematica** : cpu = 0.387949 (sec), leaf count = 4815

$$\left\{ \left\{ \begin{aligned} x(t) &\rightarrow \frac{e^{-\frac{\sqrt{-a^2-2b-\sqrt{a^2(a^2+4b)}}t}} - \frac{\sqrt{-a^2-2b+\sqrt{a^2(a^2+4b)}}t}}{\sqrt{2}} \left(e^{\frac{\sqrt{-a^2-2b-\sqrt{a^2(a^2+4b)}}t}} a^2 - e^{\frac{\sqrt{-a^2-2b+\sqrt{a^2(a^2+4b)}}t}} a^2 - e^{\sqrt{2}t} \right) \right. \end{aligned} \right. \right.$$

✓ Maple : cpu = 0.141 (sec), leaf count = 868

$$\left\{ \left\{ x(t) = _C1 e^{-\frac{t}{2} \sqrt{-2a^2 - 2\sqrt{a^2(a^2+4b)} - 4b}} + _C2 e^{\frac{t}{2} \sqrt{-2a^2 - 2\sqrt{a^2(a^2+4b)} - 4b}} + _C3 e^{-\frac{t}{2} \sqrt{-2a^2 + 2\sqrt{a^2(a^2+4b)} - 4b}} \right. \right.$$

2.1893 ODE No. 1893

$$\{-A0y'(t) + a1x''(t) + b1x'(t) + c1x(t) = B0e^{i\omega t}, A0x'(t) + a2y''(t) + b2y'(t) + c2y(t) = 0\}$$

✗ Mathematica : cpu = 300.006 (sec), leaf count = 0 , timed out

\$Aborted

✓ Maple : cpu = 1.164 (sec), leaf count = 4516

2.1894 ODE No. 1894

$$\{a(x'(t) - y'(t)) + b1x(t) + x''(t) = c1e^{i\omega t}, a(y'(t) - x'(t)) + b2y(t) + y''(t) = c2e^{i\omega t}\}$$

✗ Mathematica : cpu = 300.002 (sec), leaf count = 0 , timed out

\$Aborted

✓ Maple : cpu = 0.872 (sec), leaf count = 2511

$$\left\{ \left\{ x(t) = \frac{ie^{i\omega t} ac1 \omega + ie^{i\omega t} ac2 \omega - c1 e^{i\omega t} \omega^2 + c1 b2 e^{i\omega t}}{-2ia\omega^3 + iab1 \omega + iab2 \omega + \omega^4 - b1 \omega^2 - b2 \omega^2 + b1 b2} + _C1 e^{RootOf(-Z^4 + 2a_Z^3 + (b1+b2)_Z^2} \right. \right.$$

2.1895 ODE No. 1895

$$\{a11x''(t) + a12y''(t) + b11x'(t) + b12y'(t) + c11x(t) + c12y(t) = 0, a21x''(t) + a22y''(t) + b21x'(t) + b22y(t) = 0\}$$

✓ Mathematica : cpu = 0.450453 (sec), leaf count = 7517

✓ Maple : cpu = 0.222 (sec), leaf count = 1187

$$\left\{ \left\{ x(t) = \sum_{a=1}^4 e^{RootOf((a11 a22 - a12 a21)_Z^4 + (a11 b22 - a12 b21 - b12 a21 + b11 a22)_Z^3 + (a11 c22 - c21 a12 - c12 a21 + a22 c11 +} \right. \right.$$

2.1896 ODE No. 1896

$$\{x''(t) - 2x'(t) - y'(t) + y(t) = 0, 2x'(t) - x(t) + y^{(3)}(t) - y''(t) = t\}$$

✓ **Mathematica** : cpu = 0.194209 (sec), leaf count = 1132

$$\left\{ \left\{ x(t) \rightarrow \frac{1}{64} e^{-t} (2e^{2t} t^2 - 6e^{2t} t + 7e^{2t} + 1) (e^t (1-t) + e^{-t} (-2t^3 - 8t^2 - 17t - 17)) + \frac{1}{64} e^{-t} (2e^{2t} t^2 + 6e^{2t} t + 7e^{2t} + 1) \right\} \right.$$

✓ **Maple** : cpu = 0.054 (sec), leaf count = 75

$$\left\{ \left\{ x(t) = -2 - t - 2_C4 e^{t t} - 3_C5 e^{t t^2} - \frac{2_C2 e^{-t}}{3} - _C3 e^t - 6_C5 e^t, y(t) = -2 + _C1 e^t + _C2 e^{2t} \right\} \right.$$

2.1897 ODE No. 1897

$$\{x''(t) + y''(t) + y'(t) = \sinh(2t), 2x''(t) + y''(t) = 2t\}$$

✓ **Mathematica** : cpu = 0.111175 (sec), leaf count = 284

$$\left\{ \left\{ x(t) \rightarrow \frac{1}{4} c_4 e^{-2t} (2e^{2t} t - e^{2t} + 1) + c_2 t + c_1 + t \left(\frac{t^2}{2} + \frac{t}{2} - \frac{e^{4t}}{8} + e^{2t} \left(\frac{t}{2} - \frac{1}{4} \right) \right) + \frac{1}{48} e^{-2t} (-4e^{2t} (4t^2 - 3t + 1) + 3) \right\} \right.$$

✓ **Maple** : cpu = 0.154 (sec), leaf count = 98

$$\left\{ \left\{ x(t) = -\frac{\sinh(2t)}{16} - \frac{\cosh(2t)}{16} - \frac{5e^{-2t}}{16} - \frac{e^{-2t} t}{4} + \frac{t^3}{6} + \frac{e^{-2t} _C2}{4} + \frac{t^2}{4} + _C3 t + _C4, y(t) = \frac{3 \cos(2t)}{16} + \frac{3 \sin(2t)}{16} + \frac{3}{16} \right\} \right.$$

2.1898 ODE No. 1898

$$\{x''(t) - x'(t) + y'(t) = 0, x''(t) - x(t) + y''(t) = 0\}$$

✓ **Mathematica** : cpu = 0.0426225 (sec), leaf count = 420

$$\left\{ \left\{ x(t) \rightarrow -\frac{1}{5} c_1 e^{\frac{t}{2} - \frac{\sqrt{5}t}{2}} \left(\sqrt{5} e^{\sqrt{5}t} - 5e^{\frac{\sqrt{5}t}{2} + \frac{t}{2}} - \sqrt{5} \right) + \frac{c_2 e^{\frac{t}{2} - \frac{\sqrt{5}t}{2}} (e^{\sqrt{5}t} - 1)}{\sqrt{5}} - \frac{1}{10} c_4 e^{\frac{t}{2} - \frac{\sqrt{5}t}{2}} \left(5e^{\sqrt{5}t} + \sqrt{5} e^{\sqrt{5}t} + 5 \right) \right\} \right.$$

✓ **Maple** : cpu = 0.065 (sec), leaf count = 73

$$\left\{ \left\{ x(t) = \left(-\frac{\sqrt{5}}{2} - \frac{1}{2} \right) _C3 e^{\frac{(\sqrt{5}+1)t}{2}} + \left(\frac{\sqrt{5}}{2} - \frac{1}{2} \right) _C4 e^{-\frac{(\sqrt{5}-1)t}{2}} + _C1 e^t, y(t) = _C2 + _C3 e^{\frac{(\sqrt{5}+1)t}{2}} + _C4 e^{-\frac{(\sqrt{5}-1)t}{2}} \right\} \right.$$

2.1899 ODE No. 1899

$$\{x'(t) = 2x(t), y'(t) = 3x(t) - 2y(t), z'(t) = 2y(t) + 3z(t)\}$$

✓ **Mathematica** : cpu = 0.0112634 (sec), leaf count = 112

$$\left\{ \left\{ x(t) \rightarrow c_1 e^{2t}, y(t) \rightarrow \frac{3}{4} c_1 e^{-2t} (e^{4t} - 1) + c_2 e^{-2t}, z(t) \rightarrow \frac{3}{10} c_1 e^{-2t} (2e^t + 3e^{2t} + 4e^{3t} + 1) (e^t - 1)^2 + \frac{2}{5} c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.073 (sec), leaf count = 52

$$\left\{ \left\{ x(t) = _C3 e^{2t}, y(t) = \frac{3_C3 e^{2t}}{4} + e^{-2t} _C2, z(t) = _C1 e^{3t} - \frac{3_C3 e^{2t}}{2} - \frac{2 e^{-2t} _C2}{5} \right\} \right\}$$

2.1900 ODE No. 1900

$$\{x'(t) = 4x(t), y'(t) = x(t) - 2y(t), z'(t) = x(t) - 4y(t) + z(t)\}$$

✓ **Mathematica** : cpu = 0.0103857 (sec), leaf count = 94

$$\left\{ \left\{ x(t) \rightarrow c_1 e^{4t}, y(t) \rightarrow \frac{1}{6} c_1 e^{-2t} (e^{6t} - 1) + c_2 e^{-2t}, z(t) \rightarrow \frac{1}{9} c_1 e^{-2t} (e^{3t} + e^{6t} - 2) - \frac{4}{3} c_2 e^{-2t} (e^{3t} - 1) + c_3 \right\} \right\}$$

✓ **Maple** : cpu = 0.071 (sec), leaf count = 50

$$\left\{ \left\{ x(t) = _C3 e^{4t}, y(t) = \frac{_C3 e^{4t}}{6} + e^{-2t} _C2, z(t) = \frac{_C3 e^{4t}}{9} + _C1 e^t + \frac{4 e^{-2t} _C2}{3} \right\} \right\}$$

2.1901 ODE No. 1901

$$\{x'(t) = y(t) - z(t), y'(t) = x(t) + y(t), z'(t) = x(t) + z(t)\}$$

✓ **Mathematica** : cpu = 0.0113479 (sec), leaf count = 105

$$\left\{ \left\{ x(t) \rightarrow c_2 (e^t - 1) + c_3 (1 - e^t) + c_1, y(t) \rightarrow c_1 (e^t - 1) + c_2 (e^t t + 1) + c_3 (-e^t t + e^t - 1), z(t) \rightarrow c_1 (e^t \right. \right.$$

✓ **Maple** : cpu = 0.06 (sec), leaf count = 48

$$\left\{ \left\{ x(t) = _C2 + _C3 e^t, y(t) = _C3 t e^t + _C1 e^t - _C2, z(t) = _C3 t e^t + _C1 e^t - _C3 e^t - _C2 \right\} \right\}$$

2.1902 ODE No. 1902

$$\{x'(t) - y(t) + z(t) = 0, -x(t) + y'(t) - y(t) = t, -x(t) + z'(t) - z(t) = t\}$$

✓ **Mathematica** : cpu = 0.0157643 (sec), leaf count = 226

$$\{\{x(t) \rightarrow c_2(e^t - 1) + c_3(1 - e^t) + c_1 + e^{-t}(1 - e^t)(-t - 1) + e^{-t}(e^t - 1)(-t - 1), y(t) \rightarrow c_3(-e^t t + e^t)$$

✓ **Maple** : cpu = 0.053 (sec), leaf count = 56

$$\{\{x(t) = _C2 + _C3 e^t, y(t) = _C3 t e^t + _C1 e^t - _C2 - t - 1, z(t) = _C3 t e^t + _C1 e^t - _C3 e^t -$$

2.1903 ODE No. 1903

$$\{ax'(t) = bc(y(t) - z(t)), by'(t) = ac(z(t) - x(t)), cz'(t) = ab(x(t) - y(t))\}$$

✓ **Mathematica** : cpu = 0.0884897 (sec), leaf count = 1304

$$\left\{ \left\{ x(t) \rightarrow \frac{e^{-i\sqrt{a^2+b^2+c^2}t} \left(2e^{i\sqrt{a^2+b^2+c^2}t} a^2 + b^2 e^{2i\sqrt{a^2+b^2+c^2}t} + c^2 e^{2i\sqrt{a^2+b^2+c^2}t} + b^2 + c^2 \right) c_1 - b e^{-i\sqrt{a^2+b^2+c^2}t}}{2(a^2 + b^2 + c^2)} \right. \right.$$

✓ **Maple** : cpu = 0.146 (sec), leaf count = 312

$$\left\{ \left\{ x(t) = _C1 + _C2 \sin(\sqrt{a^2 + b^2 + c^2}t) + _C3 \cos(\sqrt{a^2 + b^2 + c^2}t), y(t) = -\frac{1}{b(b^2 + c^2)} \left(\sin(\sqrt{a^2 + b^2 + c^2}t) \right) \right. \right.$$

2.1904 ODE No. 1904

$$\{x'(t) = cy(t) - bz(t), y'(t) = az(t) - cx(t), z'(t) = bx(t) - ay(t)\}$$

✓ **Mathematica** : cpu = 0.0655958 (sec), leaf count = 1445

$$\left\{ \left\{ x(t) \rightarrow \frac{e^{-\sqrt{-a^2-b^2-c^2}t} \left(2e^{\sqrt{-a^2-b^2-c^2}t} a^2 + b^2 e^{2\sqrt{-a^2-b^2-c^2}t} + c^2 e^{2\sqrt{-a^2-b^2-c^2}t} + b^2 + c^2 \right) c_1 - e^{-\sqrt{-a^2-b^2-c^2}t}}{2(a^2 + b^2 + c^2)} \right. \right.$$

✓ **Maple** : cpu = 0.087 (sec), leaf count = 312

$$\left\{ \left\{ x(t) = _C1 + _C2 \sin(\sqrt{a^2 + b^2 + c^2}t) + _C3 \cos(\sqrt{a^2 + b^2 + c^2}t), y(t) = -\frac{1}{a(b^2 + c^2)} \left(\sin(\sqrt{a^2 + b^2 + c^2}t) \right) \right. \right.$$

2.1905 ODE No. 1905

$$\{x'(t) = h(t)y(t) - g(t)z(t), y'(t) = f(t)z(t) - h(t)x(t), z'(t) = g(t)x(t) - f(t)y(t)\}$$

✗ **Mathematica** : cpu = 0.00716412 (sec), leaf count = 0 , could not solve

DSolve[{Derivative[1][x][t] == h[t]*y[t] - g[t]*z[t], Derivative[1][y][t] == -(h[t]*x[t]) + f[t]*z[t], Derivative[1][z][t] == g[t]*x[t] - f[t]*y[t]}, {x[t], y[t], z[t]}

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , result contains DESol

$$\left\{ \left\{ x(t) = DESol \left(\left\{ \frac{d^3}{dt^3} Y(t) + \left(-\frac{\left(\frac{d}{dt} f(t)\right) (h(t))^2}{(h(t))^2 f(t) + f(t) (g(t))^2 - h(t) \frac{d}{dt} g(t) + \left(\frac{d}{dt} h(t)\right) g(t)} - \frac{1}{h(t)} \right) \right. \right. \right.$$

2.1906 ODE No. 1906

$$\{x'(t) = x(t) + y(t) - z(t), y'(t) = -x(t) + y(t) + z(t), z'(t) = x(t) - y(t) + z(t)\}$$

✓ **Mathematica** : cpu = 0.0501751 (sec), leaf count = 278

$$\left\{ \left\{ x(t) \rightarrow \frac{1}{3} c_1 e^t (2 \cos(\sqrt{3}t) + 1) - \frac{1}{3} c_2 e^t (-\sqrt{3} \sin(\sqrt{3}t) + \cos(\sqrt{3}t) - 1) - \frac{1}{3} c_3 e^t (\sqrt{3} \sin(\sqrt{3}t) + \cos(\sqrt{3}t) - 1) \right. \right.$$

✓ **Maple** : cpu = 0.073 (sec), leaf count = 128

$$\left\{ \left\{ x(t) = e^t (\sin(\sqrt{3}t) _C2 + \cos(\sqrt{3}t) _C3 + _C1), y(t) = -\frac{e^t (\sqrt{3} \sin(\sqrt{3}t) _C3 - \sqrt{3} \cos(\sqrt{3}t) _C2 + _C1)}{3} \right. \right.$$

2.1907 ODE No. 1907

$$\{x'(t) = -3x(t) + 48y(t) - 28z(t), y'(t) = -4x(t) + 40y(t) - 22z(t), z'(t) = -6x(t) + 57y(t) - 31z(t)\}$$

✓ **Mathematica** : cpu = 0.00995214 (sec), leaf count = 179

$$\left\{ \left\{ x(t) \rightarrow c_1 (-e^t) (2e^{2t} - 3) + 6c_2 e^t (2e^t + 3e^{2t} - 5) - 2c_3 e^t (4e^t + 5e^{2t} - 9), y(t) \rightarrow -2c_1 e^t (e^{2t} - 1) + c_2 (e^{2t} - 1) + c_3 (e^{2t} - 1) \right. \right.$$

✓ **Maple** : cpu = 0.059 (sec), leaf count = 66

$$\left\{ \left\{ x(t) = _C1 e^t + _C2 e^{2t} + _C3 e^{3t}, y(t) = \frac{2_C1 e^t}{3} + \frac{_C2 e^{2t}}{4} + _C3 e^{3t}, z(t) = _C1 e^t + \frac{_C2 e^{2t}}{4} + _C3 e^{3t} \right. \right.$$

2.1908 ODE No. 1908

$$\{x'(t) = 6x(t) - 72y(t) + 44z(t), y'(t) = 4x(t) - 4y(t) + 26z(t), z'(t) = 6x(t) - 63y(t) + 38z(t)\}$$

✓ **Mathematica** : cpu = 0.0530479 (sec), leaf count = 551

$$\left\{ \left\{ x(t) \rightarrow -36c_2 \text{RootSum} \left[\#1^3 - 40\#1^2 + 1714\#1 + 1404\&, \frac{2\#1e^{\#1t} + e^{\#1t}}{3\#1^2 - 80\#1 + 1714} \& \right] + 4c_3 \text{RootSum} \left[\#1^3 - 40\#1^2 + 1714\#1 + 1404\&, \frac{2\#1e^{\#1t} + e^{\#1t}}{3\#1^2 - 80\#1 + 1714} \& \right] \right\} \right\}$$

✓ **Maple** : cpu = 0.703 (sec), leaf count = 3207

2.1909 ODE No. 1909

$$\{x'(t) = ax(t) + \beta z(t) + gy(t), y'(t) = \alpha z(t) + by(t) + gx(t), z'(t) = \alpha y(t) + \beta x(t) + cz(t)\}$$

✓ **Mathematica** : cpu = 0.0583961 (sec), leaf count = 1630

$$\left\{ \left\{ x(t) \rightarrow -c_2 \text{RootSum} \left[\#1^3 - a\#1^2 - b\#1^2 - c\#1^2 - \alpha^2\#1 - \beta^2\#1 - g^2\#1 + ab\#1 + ac\#1 + bc\#1 - \alpha\beta\#1 - \alpha g\#1 - \beta g\#1 \right] \right\} \right\}$$

✓ **Maple** : cpu = 28.134 (sec), leaf count = 33085

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2.1910 ODE No. 1910

$$\{tx'(t) = 2x(t) - t, t^3y'(t) = t^2y(t) - x(t) + t, t^4z'(t) = t^3z(t) - t^2y(t) - x(t) + t\}$$

✓ **Mathematica** : cpu = 0.00999886 (sec), leaf count = 39

$$\left\{ \left\{ x(t) \rightarrow c_3 t^2 + t, y(t) \rightarrow c_2 t + c_3, z(t) \rightarrow c_1 t + \frac{c_3}{t} + c_2 \right\} \right\}$$

✓ **Maple** : cpu = 0.081 (sec), leaf count = 37

$$\left\{ \left\{ x(t) = _C3 t^2 + t, y(t) = _C2 t + _C3, z(t) = \frac{_C1 t^2 + _C2 t + _C3}{t} \right\} \right\}$$

2.1911 ODE No. 1911

$$\{atx'(t) = bc(y(t) - z(t)), bty'(t) = ac(z(t) - x(t)), ctz'(t) = ab(x(t) - y(t))\}$$

✗ **Mathematica** : cpu = 0.030114 (sec), leaf count = 0 , could not solve

DSolve[{a*t*Derivative[1][x][t] == b*c*(y[t] - z[t]), b*t*Derivative[1][y][t] == a*c*(x[t] + z[t]), c*t*Derivative[1][z][t] == a*b*(x[t] - y[t])}, {x[t], y[t], z[t]}, t]

✓ **Maple** : cpu = 0.144 (sec), leaf count = 322

$$\left\{ \left\{ x(t) = _C1 + _C2 \sin\left(\sqrt{a^2 + b^2 + c^2} \ln(t)\right) + _C3 \cos\left(\sqrt{a^2 + b^2 + c^2} \ln(t)\right), y(t) = \frac{1}{b(b^2 + c^2)} \right\} \right\}$$

2.1912 ODE No. 1912

$$\{x1'(t) = ax2(t) + bx3(t) \cos(ct) + bx4(t) \sin(ct), x2'(t) = -ax1(t) + bx3(t) \sin(ct) - bx4(t) \cos(ct), x3'(t) = -$$

✗ **Mathematica** : cpu = 0.0620334 (sec), leaf count = 0 , could not solve

DSolve[{Derivative[1][x1][t] == a*x2[t] + b*Cos[c*t]*x3[t] + b*Sin[c*t]*x4[t], Derivative[1][x2][t] == - (a*x1[t]) + b*Sin[c*t]*x3[t] - b*Cos[c*t]*x4[t], Derivative[1][x3][t] == - (b*Cos[c*t]*x1[t]) - b*Sin[c*t]*x2[t] + a*x4[t], Derivative[1][x4][t] == - (b*Sin[c*t]*x1[t]) + b*Cos[c*t]*x2[t] - a*x3[t]}, {x[t], y[t], z[t]}, t]

✓ **Maple** : cpu = 2.669 (sec), leaf count = 11400

2.1913 ODE No. 1913

$$\{x'(t) = -x(t)(x(t) + y(t)), y'(t) = y(t)(x(t) + y(t))\}$$

✓ **Mathematica** : cpu = 0.0341173 (sec), leaf count = 64

$$\{\{y(t) \rightarrow -\sqrt{c_1} \cot(\sqrt{c_1}t - \sqrt{c_1}c_2), x(t) \rightarrow -\sqrt{c_1} \tan(\sqrt{c_1}t - \sqrt{c_1}c_2)\}\}$$

✓ **Maple** : cpu = 0.136 (sec), leaf count = 54

$$\left\{ \left\{ \{x(t) = 0\}, \{y(t) = (_C1 - t)^{-1}\} \right\}, \left\{ \left\{ x(t) = \frac{1}{_C1} \tanh\left(\frac{-C2 + t}{_C1}\right) \right\}, \left\{ y(t) = -\frac{(x(t))^2 + \frac{d}{dt}x(t)}{x(t)} \right\} \right\} \right\}$$

2.1915 ODE No. 1915

$$\{x'(t) = x(t)(a(px(t) + qy(t)) + \alpha), y'(t) = y(t)(b(px(t) + qy(t)) + \beta)\}$$

✗ **Mathematica** : cpu = 300.066 (sec), leaf count = 0 , timed out

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✓ **Maple** : cpu = 12. (sec), leaf count = 181

$$\left\{ \left\{ x(t) = 0 \right\}, \left\{ y(t) = \frac{\beta}{e^{-\beta t} C1 \beta - bq} \right\} \right\}, \left\{ x(t) = ODESolStruc \left(-b(-a), \left[\left(-b(-a) \right)^{-\frac{a+b}{a}} e^{-\frac{a(\beta - b\alpha)}{a}} \right] \right) \right\}$$

2.1916 ODE No. 1916

$$\{x'(t) = h(a - x(t))(c - x(t) - y(t)), y'(t) = k(b - y(t))(c - x(t) - y(t))\}$$

✗ **Mathematica** : cpu = 250.059 (sec), leaf count = 0 , could not solve

DSolve[{Derivative[1][x][t] == h*(a - x[t])* (c - x[t] - y[t]), Derivative[1][y][t] ==

✓ **Maple** : cpu = 0.484 (sec), leaf count = 237

$$\left\{ \left\{ x(t) = a \right\}, \left\{ y(t) = -\frac{ae^{-C1 ka + C1 kb - C1 kc + akt + bkt - ckt} - ce^{-C1 ka + C1 kb - C1 kc + akt + bkt - ckt} + b}{-1 + e^{-C1 ka + C1 kb - C1 kc + akt + bkt - ckt}} \right\} \right\}, \left\{ x \right\}$$

2.1917 ODE No. 1917

$$\{x'(t) = y(t)^2 - \cos(x(t)), y'(t) = y(t)(-\sin(x(t)))\}$$

✗ **Mathematica** : cpu = 250.044 (sec), leaf count = 0 , could not solve

DSolve[{Derivative[1][x][t] == -Cos[x[t]] + y[t]^2, Derivative[1][y][t] == -
(Sin[x[t]]*y[t])}, {x[t], y[t]}, t]

✓ **Maple** : cpu = 0.901 (sec), leaf count = 109

$$\left\{ \left\{ x(t) = \text{RootOf} \left(2 \int^{-Z} \left(\tan \left(\text{RootOf} \left(-3 \sqrt{-(\cos(_f))^2} \ln \left(9/4 \frac{(\cos(_f))^2}{(\cos(_Z))^2} \right) + 3 C1 \sqrt{-(\cos(_Z))^2} \right) \right) \right) \right\} \right\}$$

2.1918 ODE No. 1918

$$\{x'(t) = -x(t)y(t)^2 + x(t) + y(t), y'(t) = x(t)^2y(t) - x(t) - y(t)\}$$

✗ **Mathematica** : cpu = 0.0898742 (sec), leaf count = 0 , could not solve

```
DSolve[{Derivative[1][x][t] == x[t] + y[t] - x[t]*y[t]^2, Derivative[1][y][t] == -x[t] - y[t] + x[t]^2*y[t]}, {x[t], y[t]}, t]
```

✓ **Maple** : cpu = 2.268 (sec), leaf count = 245

$$\left\{ \{x(t) = 0\}, \{y(t) = 0\}, \left\{ x(t) = \text{ODESolStruc} \left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) - \frac{1}{2a^2} \left(4b(-a) \right) \right] \right) \right\} \right.$$

2.1919 ODE No. 1919

$$\{x'(t) = x(t) (-(x(t)^2 + y(t)^2)) + x(t) + y(t), y'(t) = -y(t) (x(t)^2 + y(t)^2) - x(t) + y(t)\}$$

✗ **Mathematica** : cpu = 0.108617 (sec), leaf count = 0 , could not solve

```
DSolve[{Derivative[1][x][t] == x[t] + y[t] - x[t]*(x[t]^2 + y[t]^2), Derivative[1][y][t] == -x[t] + y[t] - y[t]*(x[t]^2 + y[t]^2)}, {x[t], y[t]}, t]
```

✓ **Maple** : cpu = 4.945 (sec), leaf count = 249

$$\left\{ \{x(t) = 0\}, \{y(t) = 0\}, \left\{ x(t) = \text{ODESolStruc} \left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) - \frac{1}{2a^3} \left(6b(-a) \right) \right] \right) \right\} \right.$$

2.1920 ODE No. 1920

$$\{x'(t) = x(t) (x(t)^2 + y(t)^2 - 1) - y(t), y'(t) = y(t) (x(t)^2 + y(t)^2 - 1) + x(t)\}$$

✗ **Mathematica** : cpu = 0.0828333 (sec), leaf count = 0 , could not solve

```
DSolve[{Derivative[1][x][t] == -y[t] + x[t]*(-1 + x[t]^2 + y[t]^2), Derivative[1][y][t] == 1 + x[t]^2 + y[t]^2)}, {x[t], y[t]}, t]
```

✓ **Maple** : cpu = 4.986 (sec), leaf count = 248

$$\left\{ \{x(t) = 0\}, \{y(t) = 0\}, \left\{ x(t) = \text{ODESolStruc} \left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) + \frac{1}{2a^3} \left(-6b(-a) \right) \right] \right) \right\} \right.$$

2.1921 ODE No. 1921

$$\left\{ x'(t) = -y(t) (x(t)^2 + y(t)^2), y'(t) = \begin{pmatrix} x(t)^2 + y(t)^2 & x(t)^2 + y(t)^2 \geq 2x(t) \\ (x(t)^2 + y(t)^2) \left(\frac{x(t)}{2} - \frac{y(t)^2}{2x(t)} \right) & \text{True} \end{pmatrix} \right\}$$

✗ **Mathematica** : cpu = 2.4735 (sec), leaf count = 0 , could not solve

`DSolve[{Derivative[1][x][t] == -(y[t]*(x[t]^2 + y[t]^2)), Derivative[1][y][t] == Piecewise[{{Sin[(x[t]^2 + y[t]^2)^(-1)]*x[t]*(-1 + x[t]^2 + y[t]^2), x[t]^2 + y[t]^2 != 1}}, 0] - y[t], Derivative[1][y][t] == Piecewise[{{Sin[(x[t]^2 + y[t]^2)^(-1)]*y[t]*(-1 + x[t]^2 + y[t]^2), x[t]^2 + y[t]^2 != 1}}, 0] + x[t]}, {x[t], y[t]}, t]}`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

`dsolve({diff(x(t),t) = -y(t)*(x(t)^2+y(t)^2), diff(y(t),t) = piecewise(2*x(t) <= x(t)^2+y(t)^2, 1/2*y(t)^2/x(t))*(x(t)^2+y(t)^2)})`

2.1922 ODE No. 1922

$$\left\{ x'(t) = \begin{pmatrix} \sin\left(\frac{1}{x(t)^2+y(t)^2}\right) x(t) (x(t)^2 + y(t)^2 - 1) & x(t)^2 + y(t)^2 \neq 1 \\ 0 & \text{True} \end{pmatrix} - y(t), y'(t) = \begin{pmatrix} \sin\left(\frac{1}{x(t)^2+y(t)^2}\right) y(t) (x(t)^2 + y(t)^2 - 1) & x(t)^2 + y(t)^2 \neq 1 \\ 0 & \text{True} \end{pmatrix} \right\}$$

✗ **Mathematica** : cpu = 11.4793 (sec), leaf count = 0 , could not solve

`DSolve[{Derivative[1][x][t] == Piecewise[{{Sin[(x[t]^2 + y[t]^2)^(-1)]*x[t]*(-1 + x[t]^2 + y[t]^2), x[t]^2 + y[t]^2 != 1}}, 0] - y[t], Derivative[1][y][t] == Piecewise[{{Sin[(x[t]^2 + y[t]^2)^(-1)]*y[t]*(-1 + x[t]^2 + y[t]^2), x[t]^2 + y[t]^2 != 1}}, 0] + x[t]}, {x[t], y[t]}, t]}`

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.1923 ODE No. 1923

$$\{(t^2 + 1) x'(t) = y(t) - tx(t), (t^2 + 1) y'(t) = -x(t) - ty(t)\}$$

✓ **Mathematica** : cpu = 0.0124221 (sec), leaf count = 53

$$\left\{ \left\{ x(t) \rightarrow \frac{c_1}{t^2 + 1} + \frac{c_2 t}{t^2 + 1}, y(t) \rightarrow \frac{c_2}{t^2 + 1} - \frac{c_1 t}{t^2 + 1} \right\} \right\}$$

✓ **Maple** : cpu = 0.157 (sec), leaf count = 35

$$\left\{ \left\{ x(t) = \frac{-C1 t + -C2}{t^2 + 1}, y(t) = \frac{-C2 t + -C1}{t^2 + 1} \right\} \right\}$$

2.1924 ODE No. 1924

$$\{(-t^2 + x(t)^2 + y(t)^2) x'(t) = -2tx(t), (-t^2 + x(t)^2 + y(t)^2) y'(t) = -2ty(t)\}$$

✓ **Mathematica** : cpu = 0.0712521 (sec), leaf count = 191

$$\left\{ \left\{ y(t) \rightarrow \frac{c_1 \left(e^{c_2} - \sqrt{-4c_1^2 t^2 + e^{2c_2} - 4t^2} \right)}{2(c_1^2 + 1)}, x(t) \rightarrow \frac{e^{c_2} - \sqrt{-4c_1^2 t^2 + e^{2c_2} - 4t^2}}{2(c_1^2 + 1)} \right\}, \left\{ y(t) \rightarrow \frac{c_1 \left(\sqrt{-4c_1^2 t^2 + e^{2c_2} - 4t^2} \right)}{2(c_1^2 + 1)}, x(t) \rightarrow \frac{e^{c_2} - \sqrt{-4c_1^2 t^2 + e^{2c_2} - 4t^2}}{2(c_1^2 + 1)} \right\} \right\}$$

✓ **Maple** : cpu = 0.282 (sec), leaf count = 186

$$\left\{ \left\{ x(t) = 0 \right\}, \left\{ y(t) = \frac{1}{2_C1} \left(1 + \sqrt{-4_C1^2 t^2 + 1} \right), y(t) = -\frac{1}{2_C1} \left(-1 + \sqrt{-4_C1^2 t^2 + 1} \right) \right\}, \left\{ x(t) = \frac{1}{2_C1} \left(1 + \sqrt{-4_C1^2 t^2 + 1} \right), y(t) = -\frac{1}{2_C1} \left(-1 + \sqrt{-4_C1^2 t^2 + 1} \right) \right\} \right\}$$

2.1925 ODE No. 1925

$$\{ay'(t) + tx'(t) - x(t) + y'(t)^2 = 0, x'(t)y'(t) + ty'(t) - y(t) = 0\}$$

✗ **Mathematica** : cpu = 8.47343 (sec), leaf count = 0 , could not solve

`DSolve[{-x[t] + t*Derivative[1][x][t] + a*Derivative[1][y][t] + Derivative[1][y][t]^2 + y[t] + t*Derivative[1][y][t] + Derivative[1][x][t]*Derivative[1][y][t] == 0}, {x[t], y[t]}`

✓ **Maple** : cpu = 0.266 (sec), leaf count = 230

$$\left\{ \left\{ x(t) = -\frac{t^2}{3}, y(t) = -\frac{t^3}{27a} \right\}, \left\{ x(t) = -C1 t + -C2, y(t) = \frac{-\left(\frac{d}{dt}x(t)\right)^3 - 2\left(\frac{d}{dt}x(t)\right)^2 t - \left(\frac{d}{dt}x(t)\right) t^2}{a} \right\} \right\}$$

2.1926 ODE No. 1926

$$\{x(t) = f(x'(t), y'(t)) + tx'(t), y(t) = g(x'(t), y'(t)) + ty'(t)\}$$

✗ **Mathematica** : cpu = 0.00648736 (sec), leaf count = 0 , could not solve

`DSolve[{x[t] == f[Derivative[1][x][t], Derivative[1][y][t]] + t*Derivative[1][x][t], y[t] == g[Derivative[1][x][t], Derivative[1][y][t]] + t*Derivative[1][y][t]}`

✓ **Maple** : cpu = 0.104 (sec), leaf count = 96

$$\left\{ \left\{ \int \text{RootOf} \left(t \frac{d}{dt} y(t) + g \left(-Z, \frac{d}{dt} y(t) \right) - y(t) \right) dt + -C1 = t \text{RootOf} \left(t \frac{d}{dt} y(t) + g \left(-Z, \frac{d}{dt} y(t) \right) - y(t) \right) \right\} \right\}$$

2.1927 ODE No. 1927

$$\{x''(t) = ae^{2x(t)} + e^{-2x(t)} \cos^2(y(t)) - e^{-x(t)}, y''(t) = e^{-2x(t)} \sin(y(t)) \cos(y(t)) - \tan(y(t)) \sec^2(y(t))\}$$

✗ **Mathematica** : cpu = 0.0099291 (sec), leaf count = 0 , could not solve

DSolve[{Derivative[2][x][t] == -E^(-x[t]) + a*E^(2*x[t]) + Cos[y[t]]^2/E^(2*x[t]), Derivative[2][y][t] == E^(-2*x[t]) Sin[y[t]] Cos[y[t]] - Tan[y[t]] Sec^2[y[t]]}, {x[t], y[t]}, t]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , could not solve

dsolve({diff(diff(x(t),t),t) = a*exp(2*x(t))-exp(-x(t))+exp(-2*x(t))*cos(y(t))^2, diff(diff(y(t),t),t) = exp(-2*x(t))*sin(y(t))*cos(y(t))-sin(y(t))/cos(y(t))^3})

2.1928 ODE No. 1928

$$\left\{ x''(t) = \frac{kx(t)}{(x(t)^2 + y(t)^2)^{3/2}}, y''(t) = \frac{ky(t)}{(x(t)^2 + y(t)^2)^{3/2}} \right\}$$

✗ **Mathematica** : cpu = 0.00721564 (sec), leaf count = 0 , could not solve

DSolve[{Derivative[2][x][t] == (k*x[t])/(x[t]^2 + y[t]^2)^(3/2), Derivative[2][y][t] == (k*y[t])/(x[t]^2 + y[t]^2)^(3/2)}, {x[t], y[t]}, t]

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired

2.1929 ODE No. 1929

$$\left\{ x''(t) = -\frac{cy(t)x'(t)f\left(\sqrt{x'(t)^2 + y'(t)^2}\right)}{\sqrt{x'(t)^2 + y'(t)^2}}, y''(t) = -\frac{cy(t)y'(t)f\left(\sqrt{x'(t)^2 + y'(t)^2}\right)}{\sqrt{x'(t)^2 + y'(t)^2}} - g \right\}$$

✗ **Mathematica** : cpu = 0.00892339 (sec), leaf count = 0 , could not solve

DSolve[{Derivative[2][x][t] == -(c*f[Sqrt[Derivative[1][x][t]^2 + Derivative[1][y][t]^2])/(Derivative[1][x][t]^2 + Derivative[1][y][t]^2)*y[t]*Derivative[1][y][t] - g, Derivative[2][y][t] == -(c*f[Sqrt[Derivative[1][x][t]^2 + Derivative[1][y][t]^2])/(Derivative[1][x][t]^2 + Derivative[1][y][t]^2)*x[t]*Derivative[1][x][t] - g}, {x[t], y[t]}, t]

✓ **Maple** : cpu = 3.449 (sec), leaf count = 116

$$\left\{ \left[\left\{ y(t) = ODESolStruc\left(-a, \left[\left(\frac{d}{d_a} b(-a) \right) - b(-a) + 1 \left(C(-a) f\left(\sqrt{(-b(-a))^2}\right) - b(-a) + g \sqrt{\dots} \right) \right] \right\} \right. \right.$$

2.1930 ODE No. 1930

$$\{x'(t) = y(t) - z(t), y'(t) = x(t)^2 + y(t), z'(t) = x(t)^2 + z(t)\}$$

✓ **Mathematica** : cpu = 0.0514825 (sec), leaf count = 308

$$\left\{ \left\{ x(t) \rightarrow e^{-c_3} (e^{c_3} c_1 + e^t), y(t) \rightarrow c_2 (e^{-c_3} (e^{c_3} c_1 + e^t) - c_1) + (e^{-c_3} (e^{c_3} c_1 + e^t) - c_1) \left(-\frac{c_1^2}{e^{-c_3} (e^{c_3} c_1 + e^t)} \right) \right\} \right.$$

✓ **Maple** : cpu = 0.044 (sec), leaf count = 45

$$\left\{ \left\{ x(t) = _C2 + _C3 e^t \right\}, \left\{ y(t) = \left(\int (x(t))^2 e^{-t} dt + _C1 \right) e^t \right\}, \left\{ z(t) = -\frac{d}{dt} x(t) + y(t) \right\} \right\}$$

2.1931 ODE No. 1931

$$\{ax'(t) = (b - c)y(t)z(t), by'(t) = (c - a)x(t)z(t), cz'(t) = (a - b)x(t)y(t)\}$$

✓ **Mathematica** : cpu = 5.51259 (sec), leaf count = 10101

$$\left\{ \left\{ x(t) \rightarrow \frac{\sqrt{2b^2 \sqrt{a(a-c)} c_1 \operatorname{sn} \left(\frac{\frac{\sqrt{2} \sqrt{a} \sqrt{a-c} \sqrt{c_2} t - \sqrt{2} \sqrt{a} \sqrt{b} \sqrt{a-c} \sqrt{c_2} t - \sqrt{2} \sqrt{a} \sqrt{a-c} \sqrt{c_2} c_3 + \sqrt{2} \sqrt{a} \sqrt{b} \sqrt{a-c} \sqrt{c_2} c_3}{\sqrt{b} \sqrt{b-c}} \right) - \frac{(a-b)bc_1}{(a-c)cc_2}}{a} \right)}{(a-c) \sqrt{b(b-c)} c_1} - \frac{\sqrt{2b} \sqrt{a(a-c)}}{a} \right\} \right.$$

✓ **Maple** : cpu = 0.627 (sec), leaf count = 944

$$\left\{ \left\{ x(t) = 0 \right\}, \left\{ y(t) = 0 \right\}, \left\{ z(t) = _C1 \right\} \right\}, \left\{ \left\{ x(t) = 0 \right\}, \left\{ y(t) = _C1 \right\}, \left\{ z(t) = 0 \right\} \right\}, \left\{ \left\{ x(t) = _C1 \right\}, \left\{ y(t) = 0 \right\}, \left\{ z(t) = 0 \right\} \right\}$$

2.1932 ODE No. 1932

$$\{x'(t) = x(t)(y(t) - z(t)), y'(t) = y(t)(z(t) - x(t)), z'(t) = z(t)(x(t) - y(t))\}$$

✗ **Mathematica** : cpu = 2.3197 (sec), leaf count = 0 , could not solve

```
DSolve[{Derivative[1][x][t] == x[t]*(y[t] - z[t]), Derivative[1][y][t] == y[t]*(-x[t] + z[t]), Derivative[1][z][t] == (x[t] - y[t])*z[t]}, {x[t], y[t], z[t]}, t]
```

✓ **Maple** : cpu = 1.089 (sec), leaf count = 393

$$\left\{ \{x(t) = 0\}, \{y(t) = 0\}, \{z(t) = -C1\}, \{x(t) = 0\}, \left\{ y(t) = \frac{-C1 e^{-C2} - C1 e^{-C1 t}}{-1 + e^{-C2} - C1 e^{-C1 t}} \right\}, \left\{ z(t) = \frac{\frac{d}{dt}y(t)}{y(t)} \right\} \right\}$$

2.1933 ODE No. 1933

$$\{x'(t) + y'(t) = x(t)y(t), y'(t) + z'(t) = y(t)z(t), x'(t) + z'(t) = x(t)z(t)\}$$

✗ **Mathematica** : cpu = 127.142 (sec), leaf count = 0 , could not solve

```
DSolve[{Derivative[1][x][t] + Derivative[1][y][t] == x[t]*y[t], Derivative[1][y][t] + Derivative[1][z][t] == y[t]*z[t], Derivative[1][x][t] + Derivative[1][z][t] == x[t]*z[t]}, {x[t], y[t], z[t]}, t]
```

✓ **Maple** : cpu = 2.302 (sec), leaf count = 17749

Too large to display

2.1934 ODE No. 1934

$$\left\{ x'(t) = \frac{x(t)^2}{2} - \frac{y(t)}{24}, y'(t) = 2x(t)y(t) - 3z(t), z'(t) = 3x(t)z(t) - \frac{y(t)^2}{6} \right\}$$

✗ **Mathematica** : cpu = 73.5986 (sec), leaf count = 0 , could not solve

```
DSolve[{Derivative[1][x][t] == x[t]^2/2 - y[t]/24, Derivative[1][y][t] == 2*x[t]*y[t] - y[t]^2/6 + 3*x[t]*z[t], Derivative[1][z][t] == 3*x[t]*z[t] - y[t]^2/6}, {x[t], y[t], z[t]}, t]
```

✓ **Maple** : cpu = 1.328 (sec), leaf count = 376

$$\left\{ \{y(t) = 0\}, \{x(t) = 2(2 - C1 - t)^{-1}\}, \{z(t) = 0\}, \{y(t) = 256(-C1 t - C2)^{-4}\}, \left\{ x(t) = \frac{1}{2y(t)} \right\} \right\}$$

2.1935 ODE No. 1935

$$\{x'(t) = x(t)(y(t)^2 - z(t)^2), y'(t) = y(t)(z(t)^2 - x(t)^2), z'(t) = z(t)(x(t)^2 - y(t)^2)\}$$

✗ **Mathematica** : cpu = 0.0524665 (sec), leaf count = 0 , could not solve

```
DSolve[{Derivative[1][x][t] == x[t]*(y[t]^2 - z[t]^2), Derivative[1][y][t] == y[t]*(-x[t]^2 + z[t]^2), Derivative[1][z][t] == (x[t]^2 - y[t]^2)*z[t]}, {x[t], y[t], z[t]},
```

✓ **Maple** : cpu = 1.733 (sec), leaf count = 741

$$\left\{ \{x(t) = 0\}, \{y(t) = 0\}, \{z(t) = -C1\}, \{x(t) = 0\}, \left\{ y(t) = \frac{1}{(e^{-C2-C1})^2 (e^{-C1t})^2 - 1} \sqrt{((e^{-C2-C1})^2 - 1)} \right\} \right\}$$

2.1936 ODE No. 1936

$$\{x'(t) = x(t)(y(t)^2 - z(t)^2), y'(t) = -y(t)(x(t)^2 + z(t)^2), z'(t) = z(t)(x(t)^2 + y(t)^2)\}$$

✗ **Mathematica** : cpu = 0.050105 (sec), leaf count = 0 , could not solve

```
DSolve[{Derivative[1][x][t] == x[t]*(y[t]^2 - z[t]^2), Derivative[1][y][t] == -(y[t]*(x[t]^2 + z[t]^2)), Derivative[1][z][t] == (x[t]^2 + y[t]^2)*z[t]}, {x[t], y[t], z[t]},
```

✓ **Maple** : cpu = 0.651 (sec), leaf count = 712

$$\left\{ \{x(t) = 0\}, \{y(t) = 0\}, \{z(t) = -C1\}, \{x(t) = 0\}, \left\{ y(t) = \frac{1}{(e^{-C2-C1})^2 (e^{-C1t})^2 - 1} \sqrt{-((e^{-C2-C1})^2 - 1)} \right\} \right\}$$

2.1937 ODE No. 1937

$$\{x'(t) = -x(t)y(t)^2 + x(t) + y(t), y'(t) = x(t)^2y(t) - x(t) - y(t), z'(t) = y(t)^2 - x(t)^2\}$$

✗ **Mathematica** : cpu = 0.269557 (sec), leaf count = 0 , could not solve

```
DSolve[{Derivative[1][x][t] == x[t] + y[t] - x[t]*y[t]^2, Derivative[1][y][t] == -x[t] - y[t] + x[t]^2*y[t], Derivative[1][z][t] == -x[t]^2 + y[t]^2}, {x[t], y[t], z[t]},
```

✓ **Maple** : cpu = 1.998 (sec), leaf count = 305

$$\left\{ \{x(t) = 0\}, \{y(t) = 0\}, \{z(t) = -C1\}, \left[x(t) = \text{ODESolStruc}\left(-a, \left[\left(\frac{d}{d_a} - b(-a) \right) - b(-a) - \frac{1}{2} \right] \right) \right] \right\}$$

2.1938 ODE No. 1938

$$\left\{ x''(t) = \frac{x(t)f'(r)}{r}, y''(t) = \frac{y(t)f'(r)}{r}, z''(t) = \frac{z(t)f'(r)}{r} \right\}$$

✓ **Mathematica** : cpu = 0.00990095 (sec), leaf count = 137

$$\left\{ \left\{ x(t) \rightarrow c_1 e^{-\frac{t\sqrt{f'(r)}}{\sqrt{r}}} + c_2 e^{\frac{t\sqrt{f'(r)}}{\sqrt{r}}}, y(t) \rightarrow c_3 e^{-\frac{t\sqrt{f'(r)}}{\sqrt{r}}} + c_4 e^{\frac{t\sqrt{f'(r)}}{\sqrt{r}}}, z(t) \rightarrow c_5 e^{-\frac{t\sqrt{f'(r)}}{\sqrt{r}}} + c_6 e^{\frac{t\sqrt{f'(r)}}{\sqrt{r}}} \right\} \right\}$$

✓ **Maple** : cpu = 0.103 (sec), leaf count = 101

$$\left\{ \left\{ x(t) = _C5 e^{t\sqrt{\frac{d}{dr}F(r)}\frac{1}{\sqrt{r}}} + _C6 e^{-t\sqrt{\frac{d}{dr}F(r)}\frac{1}{\sqrt{r}}}, y(t) = _C3 e^{t\sqrt{\frac{d}{dr}F(r)}\frac{1}{\sqrt{r}}} + _C4 e^{-t\sqrt{\frac{d}{dr}F(r)}\frac{1}{\sqrt{r}}}, z(t) = _C1 e^{t\sqrt{\frac{d}{dr}F(r)}\frac{1}{\sqrt{r}}} + _C2 e^{-t\sqrt{\frac{d}{dr}F(r)}\frac{1}{\sqrt{r}}} \right\} \right\}$$

2.1939 ODE No. 1939

$$\{(x(t) - y(t))(x(t) - z(t))x'(t) = f(t), (y(t) - x(t))(y(t) - z(t))y'(t) = f(t), (z(t) - x(t))(z(t) - y(t))z'(t) = f(t)\}$$

✗ **Mathematica** : cpu = 0.0136748 (sec), leaf count = 0 , could not solve

```
DSolve[{(x[t] - y[t])*(x[t] - z[t])*Derivative[1][x][t] == f[t], (-x[t] + y[t])*(y[t] - z[t])*Derivative[1][y][t] == f[t], (z[t] - x[t])*(z[t] - y[t])*Derivative[1][z][t] == f[t]}, {x[t], y[t], z[t]}, t]
```

✓ **Maple** : cpu = 1.357 (sec), leaf count = 1121

$$\left\{ \left[\left\{ x(t) = \int 6 \frac{f(t)}{_C1^3 + 11664 _C2^2 - 23328 _C2 \int f(t) dt + 11664 (\int f(t) dt)^2} \left(-C1^4 + 11664 \left(\int f(t) dt \right)^2 \right) dt \right\} \right] \right\}$$

2.1940 ODE No. 1940

$$\{x1'(t) \sin(x2(t)) = x4(t) \sin(x3(t)) + x5(t) \cos(x3(t)), x2'(t) = x4(t) \cos(x3(t)) - x5(t) \sin(x3(t)), x1'(t) \cos(x2(t)) = x4(t) \cos(x3(t)) - x5(t) \sin(x3(t))\}$$

✗ **Mathematica** : cpu = 0.00880244 (sec), leaf count = 0 , could not solve

```
DSolve[{Sin[x2[t]]*Derivative[1][x1][t] == Sin[x3[t]]*x4[t] + Cos[x3[t]]*x5[t], Derivative[1][x2][t] == x4[t]*Cos[x3[t]] - x5[t]*Sin[x3[t]], (a*(1 - lambda)*x5[t]) + Derivative[1][x4][t] == -(m*Cos[x3[t]]*Sin[x2[t]])], a*(1 - lambda)}
```

✗ **Maple** : cpu = 0. (sec), leaf count = 0 , exception

time expired