

1 Detailed lookup table and classification for each ODE

Table 1: ODE classification and performance for each differential equation

#	result
ODE 1	$y'(x) = af(x)$ <code>[_quadrature]</code> <u>Solution method</u> Separable ODE, Dependent variable missing Maple ✓ Mathematica ✓
ODE 2	$y'(x) = y(x) + x + \sin(x)$ <code>[[_linear, 'class A']]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 3	$y'(x) = x^2 + 2y(x) + 3 \cosh(x)$ <code>[[_linear, 'class A']]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 4	$y'(x) = a + bx + cy(x)$ <code>[[_linear, 'class A']]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 5	$y'(x) = a \cos(bx + c) + ky(x)$ <code>[[_linear, 'class A']]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
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#	result
ODE 6	$y'(x) = a \sin(bx + c) + ky(x)$ <code>[[_linear, 'class A']]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 7	$y'(x) = a + be^{kx} + cy(x)$ <code>[[_linear, 'class A']]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 8	$y'(x) = x(x^2 - y(x))$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 9	$y'(x) = x(ay(x) + e^{-x^2})$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 10	$y'(x) = x^2(ax^3 + by(x))$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 11	$y'(x) = ax^n y(x)$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
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#	result
ODE 12	$y'(x) = y(x) \cos(x) + \sin(x) \cos(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 13	$y'(x) = y(x) \cos(x) + e^{\sin(x)}$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 14	$y'(x) = y(x) \cot(x)$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 15	$y'(x) = 1 - y(x) \cot(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 16	$y'(x) = x \csc(x) - y(x) \cot(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 17	$y'(x) = y(x)(\cot(x) + 2 \csc(2x))$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
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#	result
ODE 18	$y'(x) = \sec(x) - y(x) \cot(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 19	$y'(x) = y(x) \cot(x) + e^x \sin(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 20	$y'(x) + 2y(x) \cot(x) + \csc(x) = 0$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 21	$y'(x) = 4x \csc(x) \sec^2(x) - 2y(x) \cot(2x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 22	$y'(x) = 2 (\cos(2x) \cot^2(x) - y(x) \csc(2x))$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 23	$y'(x) = 4x \csc(x) (y(x) + \sin^3(x))$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✗
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#	result
ODE 24	$y'(x) = 4x \csc(x) (y(x) - \tan^2(x) + 1)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 25	$y'(x) = y(x) \sec(x)$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 26	$y'(x) + \tan(x) = (1 - y(x)) \sec(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 27	$y'(x) = y(x) \tan(x)$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 28	$y'(x) = y(x) \tan(x) + \cos(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 29	$y'(x) = \cos(x) - y(x) \tan(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
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#	result
ODE 30	$y'(x) = \sec(x) - y(x) \tan(x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 31	$y'(x) = y(x) \tan(x) + \sin(2x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 32	$y'(x) = \sin(2x) - y(x) \tan(x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 33	$y'(x) = 2y(x) \tan(x) + \sin(x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 34	$y'(x) = 2(y(x) \tan(2x) + \sec(2x) + 1)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 35	$y'(x) = 3y(x) \tan(x) + \csc(x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
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#	result
ODE 36	$y'(x) = y(x)(a + \sin(\log(x)) + \cos(\log(x)))$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 37	$y'(x) = 6e^{2x} - y(x) \tanh(x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 38	$y'(x) = y(x)f'(x) + f(x)f'(x)$ (ODEtools/info) missing specification of intermediate function <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 39	$y'(x) = f(x) + g(x)y(x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 40	$y'(x) = x^2 - y(x)^2$ <code>[_Riccati]</code> <u>Solution method</u> Series solution to $y'(x) = f(x, y(x))$, case $f(x, y)$ analytic Maple ✓ Mathematica ✓
ODE 41	$f(x)^2 + y'(x) = f'(x) + y(x)^2$ (ODEtools/info) missing specification of intermediate function <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✗
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#	result
ODE 42	$y'(x) - x + 1 = y(x)(y(x) + x)$ <code>[_Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 43	$y'(x) = (y(x) + x)^2$ <code>[[_homogeneous, 'class C'], _Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 44	$y'(x) = (x - y(x))^2$ <code>[[_homogeneous, 'class C'], _Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 45	$y'(x) = (x - y(x))^2 + 3(y(x) - x + 1)$ <code>[[_homogeneous, 'class C'], _Riccati]</code> <u>Solution method</u> Equation linear in the variables, $y'(x) = f(a + bx + cy(x))$ Maple ✓ Mathematica ✓
ODE 46	$y'(x) = -(x^2 + 1)y(x) + y(x)^2 + 2x$ <code>[_Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 47	$y'(x) = x(x^3 + 2) - (2x^2 - y(x))y(x)$ <code>[[_1st_order, _with_linear_symmetries], _Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
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#	result
ODE 48	$y'(x) = x(2 - x^3) + (2x^2 - y(x))y(x) + 1$ <code>[[_1st_order, _with_linear_symmetries], _Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 49	$y'(x) = \cos(x) - y(x)(\sin(x) - y(x))$ <code>[_Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 50	$y'(x) = y(x)(y(x) + \sin(2x)) + \cos(2x)$ <code>[_Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✗
ODE 51	$y'(x) = xf(x)y(x) + f(x) + y(x)^2$ <code>[_Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✗
ODE 52	$y'(x) = (-4y(x) + x + 3)^2$ <code>[[_homogeneous, 'class C'], _Riccati]</code> <u>Solution method</u> Equation linear in the variables, $y'(x) = f(a + bx + cy(x))$ Maple ✓ Mathematica ✓
ODE 53	$y'(x) = (9y(x) + 4x + 1)^2$ <code>[[_homogeneous, 'class C'], _Riccati]</code> <u>Solution method</u> Equation linear in the variables, $y'(x) = f(a + bx + cy(x))$ Maple ✓ Mathematica ✓
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#	result
ODE 54	$y'(x) = 3(a + by(x)^2 + bx)$ <code>[_Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 55	$y'(x) = a + by(x)^2$ <code>[_quadrature]</code> <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
ODE 56	$y'(x) = ax + by(x)^2$ <code>[[_Riccati , _special]]</code> <u>Solution method</u> Riccati ODE, Main form Maple ✓ Mathematica ✓
ODE 57	$y'(x) = a + bx + cy(x)^2$ <code>[_Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 58	$y'(x) = ax^{n-1} + bx^{2n} + cy(x)^2$ <code>[_Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 59	$y'(x) = ax^2 + by(x)^2$ <code>[[_Riccati , _special]]</code> <u>Solution method</u> Riccati ODE, Main form Maple ✓ Mathematica ✓
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#	result
ODE 60	$y'(x) = a_0 + a_1y(x) + a_2y(x)^2$ [_quadrature] <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
ODE 61	$y'(x) = ay(x) + by(x)^2 + f(x)$ [_Riccati] <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✗ Mathematica ✗
ODE 62	$y'(x) = a(x - y(x))y(x) + 1$ [_Riccati] <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 63	$y'(x) = ay(x)^2 + f(x) + g(x)y(x)$ [_Riccati] <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✗ Mathematica ✗
ODE 64	$y'(x) = xy(x)(y(x) + 3)$ [_separable] <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 65	$y'(x) = -x^3 + (2x^2 + 1)y(x) - xy(x)^2 - x + 1$ [_Riccati] <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
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#	result
ODE 66	$y'(x) = x(x^2y(x) - y(x)^2 + 2)$ [_Riccati] <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 67	$y'(x) = -(1-x)y(x)^2 + (1-2x)y(x) + x$ [_Riccati] <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 68	$y'(x) = axy(x)^2$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 69	$y'(x) = x^n(a + by(x)^2)$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 70	$y'(x) = ax^m + bx^ny(x)^2$ [_Riccati] <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 71	$y'(x) = y(x)(a + by(x)\cos(kx))$ [_Bernoulli] <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
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#	result
ODE 72	$y'(x) = \sin(x) (2 \sec^2(x) - y(x))$ [_linear] <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 73	$y'(x) + 4 \csc(x) = y(x)^2 \sin(x) + y(x)(3 - \cot(x))$ [_Riccati] <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 74	$y'(x) = y(x) \sec(x) + (\sin(x) - 1)^2$ [_linear] <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 75	$y'(x) + (1 - y(x)^2) \tan(x) = 0$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 76	$y'(x) = f(x) + g(x)y(x) + h(x)y(x)^2$ [_Riccati] <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✗ Mathematica ✗
ODE 77	$y'(x) = f(x) (a + by(x) + cy(x)^2)$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
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#	result
ODE 78	$y(x)^2(ax + y(x)) + y'(x)$ [_Abel] <u>Solution method</u> Abel ODE, First kind Maple ✓ Mathematica ✗
ODE 79	$y'(x) = y(x)^2 (ae^x + y(x))$ [_Abel] <u>Solution method</u> Abel ODE, First kind Maple ✓ Mathematica ✓
ODE 80	$3a(y(x) + 2x)y(x)^2 + y'(x) = 0$ [_Abel] <u>Solution method</u> Abel ODE, First kind Maple ✓ Mathematica ✓
ODE 81	$y'(x) = y(x) (a + by(x)^2)$ [_quadrature] <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 82	$y'(x) = a_0 + a_1y(x) + a_2y(x)^2 + a_3y(x)^3$ [_quadrature] <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
ODE 83	$y'(x) = xy(x)^3$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
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#	result
ODE 84	$y'(x) + y(x) (1 - xy(x)^2) = 0$ [_Bernoulli] <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 85	$y'(x) = y(x)^2(a + bxy(x))$ [[_homogeneous , 'class G'] , _Abel] <u>Solution method</u> Abel ODE, First kind Maple ✓ Mathematica ✓
ODE 86	$y(x)^3 (a + 4b^2x + 3bx^2) + y'(x) + 3xy(x)^2 = 0$ [_Abel] <u>Solution method</u> Abel ODE, First kind Maple ✓ Mathematica ✓
ODE 87	$y'(x) = y(x)^2 (x^3y(x) + 1)$ [_Abel] <u>Solution method</u> Abel ODE, First kind Maple ✗ Mathematica ✗
ODE 88	$2xy(x) (axy(x)^2 + 1) + y'(x) = 0$ [_Bernoulli] <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 89	$y'(x) = y(x)^2 - ax (1 - x^{n-1}) y(x)^3$ [_Abel] <u>Solution method</u> Abel ODE, First kind Maple ✗ Mathematica ✗
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#	result
ODE 90	$y'(x) = ay(x)^2 + xy(x)^3 (b + cx^{n-1})$ [_Abel] <u>Solution method</u> Abel ODE, First kind Maple ✗ Mathematica ✗
ODE 91	$y'(x) + y(x) (y(x)^2 \sec(x) + \tan(x)) = 0$ [_Bernoulli] <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 92	$y'(x) + y(x)^3 \tan(x) \sec(x) = 0$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 93	$y'(x) = f_0(x) + f_1(x)y(x) + f_2(x)y(x)^2 + f_3(x)y(x)^3$ [_Abel] <u>Solution method</u> Abel ODE, First kind Maple ✗ Mathematica ✗
ODE 94	$y'(x) = y(x) (y(x)^3 \sec(x) + \tan(x))$ [_Bernoulli] <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 95	$y'(x) = ax^{\frac{n}{1-n}} + by(x)^n$ [[_homogeneous, 'class G'], _Chini] <u>Solution method</u> Change of Variable, new dependent variable Maple ✓ Mathematica ✓
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#	result
ODE 96	$y'(x) = f(x)y(x) + g(x)y(x)^k$ [_Bernoulli] <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 97	$y'(x) = f(x) + g(x)y(x) + h(x)y(x)^n$ [_Chini] <u>Solution method</u> Change of Variable, new dependent variable Maple ✗ Mathematica ✗
ODE 98	$y'(x) = f(x)y(x)^m + g(x)y(x)^n$ [NONE] <u>Solution method</u> Change of Variable, new dependent variable Maple ✗ Mathematica ✗
ODE 99	$y'(x) = \sqrt{ y(x) }$ [_quadrature] <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
ODE 100	$y'(x) = a + \sqrt{A0 + B0y(x)} + by(x)$ [_quadrature] <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
ODE 101	$y'(x) = ax + b\sqrt{y(x)}$ [[_homogeneous, 'class G'], _Chini] <u>Solution method</u> Change of Variable, new dependent variable Maple ✓ Mathematica ✓
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#	result
ODE 102	$x^3 + y'(x) = x\sqrt{x^4 + 4y(x)}$ <code>[[_1st_order, _with_linear_symmetries]]</code> <u>Solution method</u> Homogeneous equation, isobaric equation Maple ✓ Mathematica ✓
ODE 103	$y'(x) + 2\left(1 - x\sqrt{y(x)}\right)y(x) = 0$ <code>[_Bernoulli]</code> <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 104	$y'(x) = \sqrt{a + by(x)^2}$ <code>[_quadrature]</code> <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
ODE 105	$y'(x) = y(x)\sqrt{a + by(x)}$ <code>[_quadrature]</code> <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
ODE 106	$g(x)(f(x) - y(x))\sqrt{(y(x) - a)(y(x) - b)} + y'(x) = 0$ <code>['y=_G(x,y)']</code> <u>Solution method</u> Change of Variable, new dependent variable Maple ✗ Mathematica ✗
ODE 107	$y'(x) = \sqrt{XY}$ <code>[_quadrature]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
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#	result
ODE 108	$y'(x) = R1(x, \sqrt{X}) R2(y(x), \sqrt{Y})$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 109	$y'(x) = \cos^2(x) \cos(y(x))$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 110	$y'(x) = \sec^2(x) \cos(y(x)) \cot(y(x))$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 111	$y'(x) = a + b \cos(Ax + By(x))$ <code>[[_homogeneous, 'class C'], _dAlembert]</code> <u>Solution method</u> Change of Variable, new dependent variable Maple ✓ Mathematica ✓
ODE 112	$y'(x) = -(1 - f'(x)) \cos(y(x)) + f'(x) - f(x) \sin(y(x)) + 1$ (ODEtools/info) missing specification of intermediate function <u>Solution method</u> Change of Variable, new dependent variable Maple ✓ Mathematica ✗
ODE 113	$g(x) \sin(ay(x)) + h(x) \cos(ay(x)) + f(x) + y'(x) = 0$ <code>['y=_G(x, y)']</code> <u>Solution method</u> Change of Variable, new dependent variable Maple ✗ Mathematica ✗
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#	result
ODE 114	$y'(x) = a + b \cos(y(x))$ <code>[_quadrature]</code> <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
ODE 115	$x (\sin(2y(x)) - x^2 \cos^2(y(x))) + y'(x) = 0$ <code>['y=_G(x,y)']</code> <u>Solution method</u> Change of Variable, new dependent variable Maple ✓ Mathematica ✓
ODE 116	$y'(x) + \tan(x) \sec(x) \cos^2(y(x)) = 0$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✗
ODE 117	$y'(x) = \cot(x) \cot(y(x))$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 118	$y'(x) + \cot(x) \cot(y(x)) = 0$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 119	$y'(x) = \sin(x)(\csc(y(x)) - \cot(y(x)))$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
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#	result
ODE 120	$y'(x) = \tan(x) \cot(y(x))$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 121	$y'(x) + \tan(x) \cot(y(x)) = 0$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 122	$y'(x) + \sin(2x) \csc(2y(x)) = 0$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 123	$y'(x) = \tan(x)(\tan(y(x)) + \sec(x) \sec(y(x)))$ <code>['y=_G(x,y)']</code> <u>Solution method</u> Exact equation, integrating factor Maple ✓ Mathematica ✓
ODE 124	$y'(x) = \cos(x) \sec^2(y(x))$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 125	$y'(x) = \sec^2(x) \sec^3(y(x))$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
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#	result
ODE 126	$y'(x) = a + b \sin(y(x))$ <code>[_quadrature]</code> <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
ODE 127	$y'(x) = a + b \sin(Ax + By(x))$ <code>[[_homogeneous, 'class C'], _dAlembert]</code> <u>Solution method</u> Change of Variable, new dependent variable Maple ✓ Mathematica ✓
ODE 128	$y'(x) = \tan(y(x))(\cos(x) \sin(y(x)) + 1)$ <code>['y=_G(x, y ') ']</code> <u>Solution method</u> Change of Variable, new dependent variable Maple ✗ Mathematica ✓
ODE 129	$y'(x) + \csc(2x) \sin(2y(x)) = 0$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 130	$f(x) + g(x) \tan(y(x)) + y'(x) = 0$ <code>['y=_G(x, y ') ']</code> <u>Solution method</u> Change of Variable, new dependent variable Maple ✗ Mathematica ✗
ODE 131	$y'(x) = \sqrt{a + b \cos(y(x))}$ <code>[_quadrature]</code> <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
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Table 1 – continued from previous page

#	result
ODE 132	$y'(x) = e^{y(x)} + x$ <code>[[_1st_order, '_with_symmetry_[F(x),G(x)] ']]</code> <u>Solution method</u> Series solution to $y'(x) = f(x, y(x))$, case $f(x, y)$ analytic Maple ✓ Mathematica ✓
ODE 133	$y'(x) = e^{y(x)+x}$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 134	$y'(x) = e^x (a + be^{-y(x)})$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 135	$y'(x) + y(x) \log(x) \log(y(x)) = 0$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 136	$y'(x) = x^{m-1} y(x)^{1-n} f(ax^m + by(x)^n)$ <code>[[_1st_order, '_with_symmetry_[F(x),G(y)] ']]</code> <u>Solution method</u> Change of Variable, new dependent variable Maple ✓ Mathematica ✓
ODE 137	$y'(x) = af(y(x))$ <code>[_quadrature]</code> <u>Solution method</u> Separable ODE, Independent variable missing Maple ✓ Mathematica ✓
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Table 1 – continued from previous page

#	result
ODE 138	$y'(x) = f(a + bx + cy(x))$ <code>[[_homogeneous, 'class C'], _dAlembert]</code> <u>Solution method</u> Equation linear in the variables, $y'(x) = f(a + bx + cy(x))$ Maple ✓ Mathematica ✓
ODE 139	$y'(x) = f(x)g(y(x))$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 140	$y'(x) = C \sec(x)y(x) + \sec^2(x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 141	$2y'(x) + 2 \csc^2(x) = y(x) \csc(x) \sec(x) - y(x)^2 \sec^2(x)$ <code>[_Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 142	$2y'(x) = 2 \sin^2(y(x)) \tan(y(x)) - x \sin(2y(x))$ <code>['y=_G(x,y)']</code> <u>Solution method</u> Change of Variable, new dependent variable Maple ✗ Mathematica ✓
ODE 143	$ax + 2y'(x) = \sqrt{a^2x^2 - 4bx^2 - 4cy(x)}$ <code>[[_homogeneous, 'class G']]</code> <u>Solution method</u> Homogeneous equation, isobaric equation Maple ✓ Mathematica ✗
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Table 1 – continued from previous page

#	result
ODE 144	$3y'(x) = \sqrt{x^2 - 3y(x)} + x$ <code>[[_1st_order, _with_linear_symmetries], _dAlembert]</code> <u>Solution method</u> Exact equation, integrating factor Maple ✓ Mathematica ✓
ODE 145	$xy'(x) = \sqrt{a^2 - x^2}$ <code>[_quadrature]</code> <u>Solution method</u> Separable ODE, Dependent variable missing Maple ✓ Mathematica ✓
ODE 146	$xy'(x) + y(x) + x = 0$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 147	$x^2 + xy'(x) - y(x) = 0$ <code>[_linear]</code> <u>Solution method</u> Exact equation, integrating factor Maple ✓ Mathematica ✓
ODE 148	$xy'(x) = x^3 - y(x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 149	$xy'(x) = x^3 + y(x) + 1$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
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#	result
ODE 150	$xy'(x) = x^m + y(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 151	$xy'(x) = x \sin(x) - y(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 152	$xy'(x) = x^2 \sin(x) + y(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 153	$xy'(x) = x^n \log(x) - y(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 154	$xy'(x) = \sin(x) - 2y(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 155	$xy'(x) = ay(x)$ [_separable] <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
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#	result
ODE 156	$xy'(x) = ay(x) + x + 1$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 157	$xy'(x) = ax + by(x)$ [_linear] <u>Solution method</u> Homogeneous equation Maple ✓ Mathematica ✓
ODE 158	$xy'(x) = ax^2 + by(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 159	$xy'(x) = a + bx^n + cy(x)$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 160	$xy'(x) + (3 - x)y(x) + 2 = 0$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 161	$(ax + 2)y(x) + xy'(x) + x = 0$ [_linear] <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
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#	result
ODE 162	$y(x)(a + bx) + xy'(x) = 0$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 163	$xy'(x) = x^3 + (1 - 2x^2)y(x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 164	$xy'(x) = ax - (1 - bx^2)y(x)$ <code>[_linear]</code> <u>Solution method</u> Linear ODE Maple ✓ Mathematica ✓
ODE 165	$(2 - ax^2)y(x) + xy'(x) + x = 0$ <code>[_linear]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 166	$x^2 + xy'(x) + y(x)^2 = 0$ <code>[_rational , _Riccati]</code> <u>Solution method</u> Riccati ODE, Special cases Maple ✓ Mathematica ✓
ODE 167	$xy'(x) = x^2 + y(x)(y(x) + 1)$ <code>[[_homogeneous , 'class D'] , _rational , _Riccati]</code> <u>Solution method</u> Riccati ODE, Special cases Maple ✓ Mathematica ✓
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Table 1 – continued from previous page

#	result
ODE 168	$xy'(x) + y(x)^2 - y(x) = x^{2/3}$ <code>[_rational, _Riccati]</code> <u>Solution method</u> Riccati ODE, Special cases Maple ✓ Mathematica ✓
ODE 169	$xy'(x) = a + by(x)^2$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 170	$xy'(x) = ax^2 + by(x)^2 + y(x)$ <code>[[_homogeneous, 'class D'], _rational, _Riccati]</code> <u>Solution method</u> Riccati ODE, Special cases Maple ✓ Mathematica ✓
ODE 171	$xy'(x) = ax^{2n} + y(x)(by(x) + n)$ <code>[_rational, _Riccati]</code> <u>Solution method</u> Riccati ODE, Special cases Maple ✓ Mathematica ✓
ODE 172	$xy'(x) = ax^n + by(x) + cy(x)^2$ <code>[_rational, _Riccati]</code> <u>Solution method</u> Riccati ODE, Special cases Maple ✓ Mathematica ✓
ODE 173	$xy'(x) = ax^n + by(x) + cy(x)^2 + k$ <code>[_rational, _Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
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Table 1 – continued from previous page

#	result
ODE 174	$a + xy'(x) + xy(x)^2 = 0$ <code>[_rational, [_Riccati, _special]]</code> <u>Solution method</u> Riccati ODE, Main form Maple ✓ Mathematica ✓
ODE 175	$xy'(x) + y(x)(1 - xy(x)) = 0$ <code>[[_homogeneous, 'class G'], _rational, _Bernoulli]</code> <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 176	$xy'(x) = y(x)(1 - xy(x))$ <code>[[_homogeneous, 'class D'], _rational, _Bernoulli]</code> <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 177	$xy'(x) = y(x)(xy(x) + 1)$ <code>[[_homogeneous, 'class D'], _rational, _Bernoulli]</code> <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 178	$xy'(x) = ax^3y(x)(1 - xy(x))$ <code>[_Bernoulli]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 179	$xy'(x) = x^3 + (2x^2 + 1)y(x) + xy(x)^2$ <code>[[_homogeneous, 'class D'], _rational, _Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
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#	result
ODE 180	$xy'(x) = y(x)(2xy(x) + 1)$ $[[_homogeneous, 'class D'], _rational, _Bernoulli]$ <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 181	$y(x)(axy(x) + 2) + bx + xy'(x) = 0$ $[_rational, [_1st_order, '_with_symmetry_ [F(x), G(x)] '], _Riccati]$ <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 182	$a_0 + a_1x + y(x)(a_2 + a_3xy(x)) + xy'(x) = 0$ $[_rational, _Riccati]$ <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 183	$ax^2y(x)^2 + xy'(x) + 2y(x) = b$ $[_rational, _Riccati]$ <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 184	$\frac{1}{2}(n - m)y(x) + x^m + x^n y(x)^2 + xy'(x) = 0$ $[_rational, _Riccati]$ <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 185	$y(x)(a + bx^n y(x)) + xy'(x) = 0$ $[[_homogeneous, 'class G'], _rational, _Bernoulli]$ <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
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Table 1 – continued from previous page

#	result
ODE 186	$xy'(x) = ax^m - by(x) - cx^n y(x)^2$ <code>[_rational, _Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 187	$xy'(x) = ax^n(x - y(x))^2 - y(x) + 2x$ <code>[[_1st_order, _with_linear_symmetries], _rational, _Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 188	$y(x)(1 - ay(x)\log(x)) + xy'(x) = 0$ <code>[_Bernoulli]</code> <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 189	$xy'(x) = f(x)(x^2 - y(x)^2) + y(x)$ <code>[[_homogeneous, 'class D'], _Riccati]</code> <u>Solution method</u> Riccati ODE, Generalized ODE Maple ✓ Mathematica ✓
ODE 190	$xy'(x) = y(x)(y(x)^2 + 1)$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 191	$xy'(x) + y(x)(1 - xy(x)^2) = 0$ <code>[[_homogeneous, 'class G'], _rational, _Bernoulli]</code> <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
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Table 1 – continued from previous page

#	result
ODE 192	$xy'(x) + y(x) = a(x^2 + 1)y(x)^3$ <code>[_rational, _Bernoulli]</code> <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 193	$xy'(x) = ay(x) + b(x^2 + 1)y(x)^3$ <code>[_rational, _Bernoulli]</code> <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 194	$xy'(x) + 2y(x) = ax^{2k}y(x)^k$ <code>[[_homogeneous, 'class G'], _rational, _Bernoulli]</code> <u>Solution method</u> The Bernoulli ODE Maple ✓ Mathematica ✓
ODE 195	$xy'(x) = 4(y(x) - \sqrt{y(x)})$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 196	$xy'(x) + 2y(x) = \sqrt{y(x)^2 + 1}$ <code>[_separable]</code> <u>Solution method</u> Separable ODE, Neither variable missing Maple ✓ Mathematica ✓
ODE 197	$xy'(x) = \sqrt{x^2 + y(x)^2} + y(x)$ <code>[[_homogeneous, 'class A'], _rational, _dAlembert]</code> <u>Solution method</u> Homogeneous equation Maple ✓ Mathematica ✓
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Table 1 – continued from previous page

#	result
ODE 198	$xy'(x) = \sqrt{x^2 - y(x)^2} + y(x)$ <code>[[_homogeneous, 'class A'], _rational, _dAlembert]</code> <u>Solution method</u> Homogeneous equation Maple ✓ Mathematica ✓
ODE 199	$xy'(x) = x\sqrt{x^2 + y(x)^2} + y(x)$ <code>[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)] ']]</code> <u>Solution method</u> Homogeneous equation, $xy'(x) = xf(x)g(u) + y(x)$ Maple ✓ Mathematica ✓
ODE 200	$xy'(x) = y(x) - x(x - y(x))\sqrt{x^2 + y(x)^2}$ <code>[[_1st_order, '_with_symmetry_[F(x),G(x)*y+H(x)] ']]</code> <u>Solution method</u> Homogeneous equation, $xy'(x) = xf(x)g(u) + y(x)$ Maple ✓ Mathematica ✓
ODE 201	$xy'(x) = a\sqrt{b^2x^2 + y(x)^2} + y(x)$ <code>[[_homogeneous, 'class A'], _dAlembert]</code> <u>Solution method</u> Homogeneous equation Maple ✓ Mathematica ✓
ODE 202	$\cos(y(x))(\sin(y(x)) - 3x^2 \cos(y(x))) + xy'(x) = 0$ <code>['y=_G(x,y ') ']</code> <u>Solution method</u> Exact equation, integrating factor Maple ✓ Mathematica ✓