

1. $y(x) = \frac{-2}{7} x^{1/2} + \frac{16}{7} x^4$
2. $y(x) = \left(\frac{1}{4} - \frac{1}{2} \ln(4x + 1) \right)^{-1/2}$
3. $y(x) = x(Cx^3 - 1)^{1/3}$
4. $\frac{1}{2} \sin 2x + xy^{-2} - 2x^{-1} \ln y + \ln y = C$
5. $y(x) = c_1 e^x + c_2 e^{2x} - 2x e^x + \frac{1}{2} e^{3x}$
6. $y_p(x) = (A + Bx + Cx^2)e^x + (D + Ex)x + (F \cos 2x + G \sin 2x)x$
7. $y(2) \approx y_2 = 3/2.$
8. $y_p(x) = \frac{1}{20} x^{-2}$
9. $x(t) = \frac{1}{2} + \frac{1}{2} \cos 2t + \frac{3}{2} \sin 2t$
10. $x(t) = c_1 e^{-2t} + c_2 e^{-4t}, y(t) = \frac{1}{3} c_1 e^{-2t} + c_2 e^{-4t}$
11. $f(t) = t e^{-3t} - \frac{3}{2} t^2 e^{-3t}$
12. $\frac{dx}{dt} = 18 - \frac{4}{100 + 2t} x(t), x(0) = 50.$
13. $C = \frac{\sqrt{5}}{2}, \omega_0 = 2, \alpha = \tan^{-1}(-1/2)$