

1. Solve the following differential equations.

(a) $y'' - 9y = 81x^2$, $y(0) = -7$, $y'(0) = 3$.

(b) $y'' - 6y' + 9y = 81x^2$, $y(0) = 3$, $y'(0) = 1$.

(c) $y'' + y' - 2y = 18(x + 2)e^{-2x}$, $y(0) = 0$, $y'(0) = -17$.

(d) $y'' + y' - 2y = 18e^{-2x}$, $y(0) = 1$, $y'(0) = -2$.

(e) $y'' - 4y' = -32(x + 2)$, $y(0) = 1$, $y'(0) = -10$.

(f) $y'' - 2y' + 2y = 20 \sin(2x)$, $y(0) = 5$, $y'(0) = -4$.

(g) $y'' + 4y = 9 \sin(x)$, $y(0) = -1$, $y'(0) = 7$.

(h) $y'' - 2y' + 2y = 20 \cos(2x)$, $y(0) = -1$, $y'(0) = -8$.

(i) $y'' + 4y = 9 \cos(x)$, $y(0) = 2$, $y'(0) = 4$.

(j) $y'' = 12(x^2 - 18x)$, $y(0) = -1$, $y'(0) = 2$.

(k) $y'' - y' = 2x - 20 \cos(2x) + 1$, $y(0) = 4$, $y'(0) = 2$.

(l) $y'' - y' = 4x + 1$, $y(0) = 1$, $y'(0) = -6$.

(m) $y'' - y' = -20 \cos(2x)$, $y(0) = 2$, $y'(0) = 3$.