

PRACTICE10 Name _____ Section _____

Find the general solution of the given differential equation. Solve completely if an initial condition is given.

1. $\frac{dy}{dx} - 2xy^2 = 0$ $y(0) = 3$

2. $y' = (2x + 3)\sqrt{y}$ $y(0) = 2$

3. $\frac{dP}{dt} = 0.1P(1000 - P)$ $P(0) = 5$

4. When a murder is committed, the body, originally at 37°C , cools according to the differential equation: $\frac{dH}{dt} = -k(H - 20)$, where k is a positive. Suppose that after two hours, the temperature is 35°C .

(a) Solve the differential equation for $H(t)$, the temperature at time t .

(b) What happens to the temperature of the body over time?

(c) If the body is found at 4 p.m. at a temperature of 30°C , when was the murder committed?

5. $y' + 2y = x + e^{-3x}$ $y(0) = 3$

6. $\frac{dy}{dx} - 3y = x + 2$ $y(0) = -1$

7. $xy' - y = x^3$ $y(1) = 5$

8. $y' + (\cot x)y = 3x + 1$

9. $2y'' + 5y' - 3y = 0$ $y(0) = 1$ $y'(0) = 4$

10. $y'' + 3y = 0$ $y(0) = 1$ $y'(0) = 3$

11. $y'' + 12y' + 36y = 0$ $y(0) = 1$ $y'(0) = 2$