

(1) Solve these differential equations.

(a) $y' = 6y$

(b) $y' + y = 0$

(c) $y' = -0.2y + 1$

(d) $y' = x^2y$.

(e) $y' = xy^2$.

(f) $y' = (3x^2 + 1)y$

(g) $y' = 2^x y^2$

(h) $y' = y^2 - 1$

(i) $y' = (\sin \frac{1}{x})y$.

(2) Solve

(a) $y' = -y, y(0) = 4$

(b) $y' = xy, y(0) = 9,$

(3) The late Mac the Knife is found at midnight with a body temperature of 90 degrees F, in a room where the temperature is 70. At 1 a.m. he has cooled to 80 degrees. When was he killed? Why?