David Ochwechi Daniel
16/ENG02/012.
Computer Engineering

a) $\frac{dy}{dt} = ky$

$\int \frac{1}{y} dy = \int k \cdot dt$

$\ln y = kt + c$

$y = e^{kt + c}$

$y = e^{kt} \cdot e^{c}$

let $e^{c} = y_0$

$y = y_0 \cdot e^{kt}$

But $y = dy_0$ and $t = 5hrs$

$dy_0 = y_0 \cdot e^{5k}$

$\ln d = 5k$

$k = \frac{\ln d}{5} = \frac{\ln 2}{5} = 0.139$

$y = y_0 e^{0.139t}$

b) 24 hrs = 1 day

$x = 1\frac{1}{2}$ day

$x = 24 \times 1.5 = 36hrs$

where $y_0 = 20$ and $t = 36$

$y = 20e^{0.139 \times 36}$

$y = 2980.2$