

Name: OKPO, Asugwu Eyo
Dept: Mechanical Engineering
MATRN NO: 18/ENG06/056

$$x = x_0 e^{kt} \dots (i)$$

$$x = 3x_0 \dots (ii)$$

$$\frac{x}{x_0} = 3 \dots (iii)$$

from eqn (i)

$$\frac{x}{x_0} = e^{kt} \dots (iv)$$

~~$$x = e^{kt} \text{ at } t = 9$$~~

~~$$\frac{x}{x_0} = e^{kt} = 3 \dots (v)$$~~

$$\frac{x}{x_0} = e^{kt} \text{ at } t = 9$$

$$\frac{x}{x_0} = e^{kt} \text{ at } t = 18$$

Case A $x_0 = 50 \dots (vi)$

B $x_0 = 150 \dots (vii)$

from eqn (v), $x = 50 e^{kt} \dots (viii)$

$$3 = e^{kt}$$

$$x = 150 e^{kt} \dots (ix)$$

$$\ln 3 = 9k$$

$$k = \frac{\ln 3}{9}$$

$$k = 0.122$$

Sub k into eqn (viii) and (ix)

$$x = 50 e^{0.122t}$$

$$x = 150 e^{0.122t}$$

$$t = 0, 1, 13$$

$$A(t) = 50 \exp(0.122 t)$$

$$B(t) = 150 \exp(0.122 t)$$

A(t) =

50
56.488
63.817
72.098
81.453
92.022
103.962
117.451
132.691
149.908
169.359
191.234
216.161
244.209
275.896
311.694

B(t) =

150
169.463
191.452
216.293
244.358
276.065
311.885
352.354
398.073
449.725
508.078
574.003
648.483
732.626
827.687
935.083

