

OLOTU OLAMIDE FINTFOLUWA.

18/ENG006/05P.

MECHANICAL ENGINEERING.

Assignment

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

$$y = 3y_0 \quad \therefore \quad y/y_0 = 3$$

$$A \quad \frac{y}{y_0} = e^{kt} = 3 \quad \text{at } t = 9.$$

$$B \quad \frac{y}{y_0} = e^{kt} = 9 \quad \text{at } t = 18.$$

$$A \quad y_0 = 50 \quad \text{--- (1)}$$

$$B \quad y_0 = 150 \quad \text{--- (2)}$$

$$y = 50e^{kt} \quad \text{--- (3)}$$

$$y = 150e^{kt} \quad \text{--- (4)}$$

$$3 = e^{kt}$$

$$\ln 3 = kt$$

$$\ln 3 = 9k$$

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

$$k = 0.122$$

$$9 = e^{kt}$$

$$\ln 9 = 18k$$

$$\frac{\ln 9}{18} = k$$

$$k = 0.122$$

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

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

$$t = 0, 1, \dots, 15$$

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

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

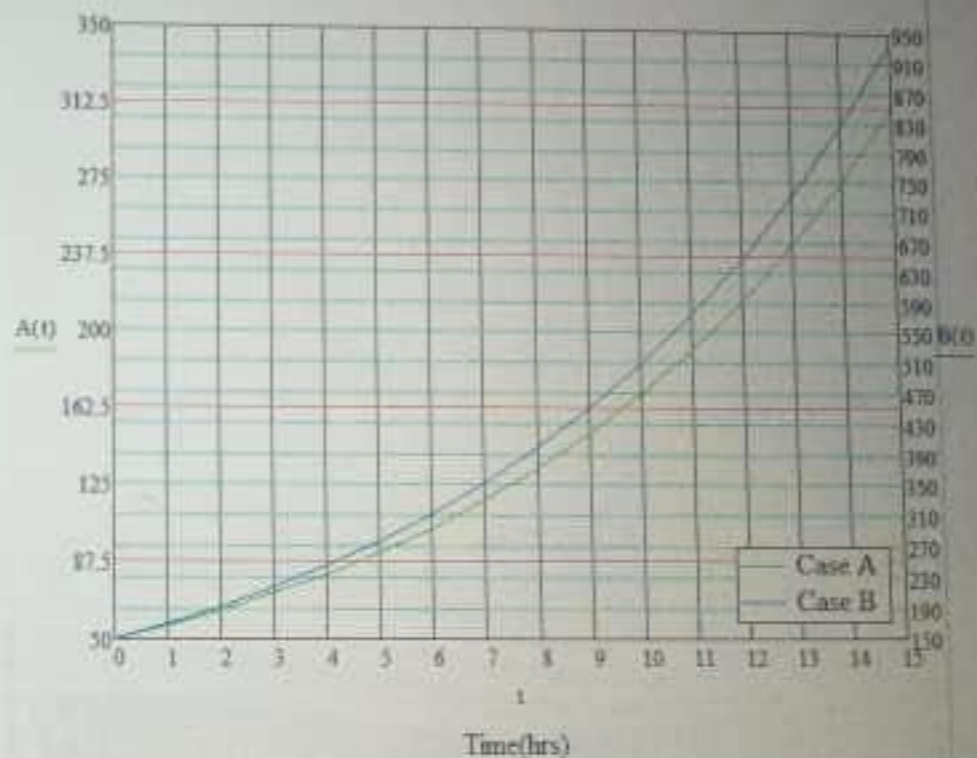
A(t) =

B(t) =

50
56.488
63.817
72.098
81.453
92.022
103.962
117.451
132.691
149.908
169.359
191.334
216.161
244.209
275.896
311.694

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

Number of bacteria for case A



Number of bacteria for case B

Numbers of bacteria versus time