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Computa Engineering

18/ENG602/086
ENG 282 (4)

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

$$y = 3y_0 \quad \frac{y}{y_0} = 3$$

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

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

$$y_0 = 50 \dots (i)$$

$$y_0 = 150 \dots (ii)$$

$$\therefore y = 50e^{kt} \dots (iii)$$

$$y = 150e^{kt} \dots (iv)$$

$$A) 3 = e^{kt}$$

$$\ln 3 = kt$$

$$\ln 3 = 9k$$

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

$$k = 0.122$$

$$9 = e^{kt}$$

$$\ln 9 = 18k$$

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

$$k = 0.122$$

$$\therefore y = 50e^{0.122t} \dots A$$

$$y = 150e^{0.122t} \dots B$$

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

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

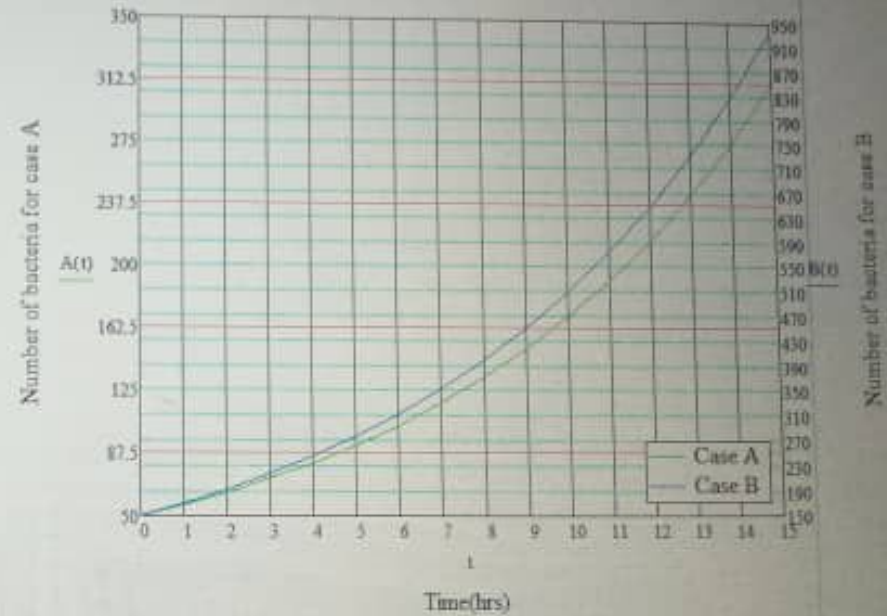
$$B(t) = 150 \exp(0.122t)$$

A(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

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



Numbers of bacteria versus time