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Electrical Engineering
18/ENG004/006
 y_0 = Initial substance
 y = final

$$\text{Formula} = y = y_0 e^{kt}$$

$$y = 3y_0$$

$$y/y_0 = e^{kt} = 3 \text{ at } t = 9$$

$$y = 3 \times y_0$$

$$y/y_0 = e^{kt} = 9 \text{ at } t = 18$$

$$y_0 = 50 \text{ --- (1) ; } y = 50e^{kt}$$

$$y_0 = 150 \text{ --- (2) ; } y = 150e^{kt}$$

(konstant $\times t$)

$$e^{kt} = \text{exponential}$$

$$e^{kt} = 3$$

$$\ln 3 = kt$$

$$\ln 3 = 9k$$

$$k = \frac{\ln 3}{9} = 0.1221$$

$$e^{kt} = 9$$

$$\ln 9 = 18k$$

$$k = \frac{\ln 9}{18} = 0.1221$$

18

$$50e^{kt}$$

$$50e^{kt}$$

t)

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

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

Graphs attached

$$t = 0, 1, 15$$

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

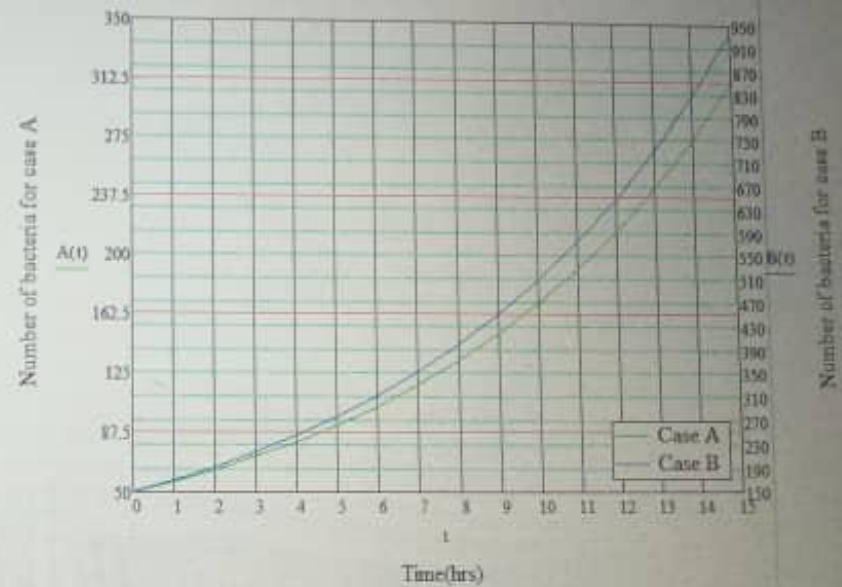
$$B(t) = 150 \exp(0.122 t)$$

A(t) =

50
56.488
63.817
72.098
81.453
92.022
103.962
117.451
132.691
149.908
169.359
191.334
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