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18/ENG03/007.

Civil ENG.

ENG 282.

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

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

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

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

$$\therefore y_0 = 50 \text{ --- (i)}$$

$$y_0 = 150 \text{ --- (ii)}$$

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

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

$$\therefore 3 = e^{kt}$$

$$\ln 3 = \ln e^{kt}$$

$$\ln 3 = k \cdot 9$$

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

$$k = 0.122$$

$$9 = e^{kt}$$

$$\ln 9 = \ln e^{kt}$$

$$\ln 9 = k(18)$$

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

$$k = 0.122$$

$$\therefore y = 50 e^{0.1226t} \text{ --- V}$$

$$y = 150 e^{0.122t} \text{ --- VD}$$

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

$$A(t) = 50 \exp(0.12t)$$

$$A(0) =$$

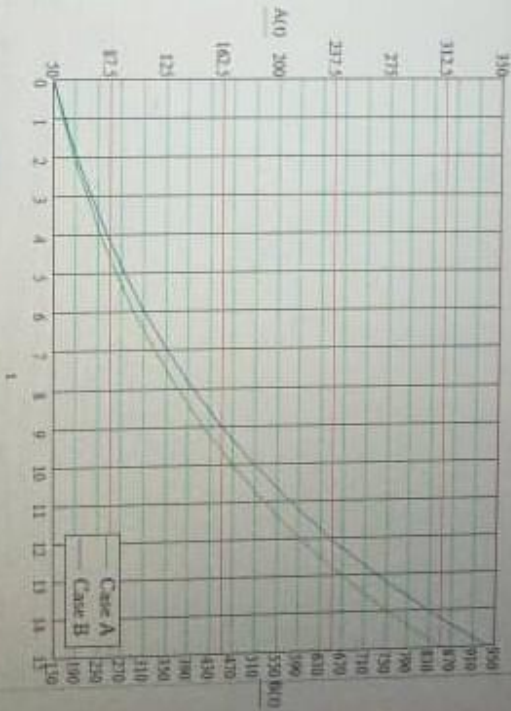
50
56.488
63.817
72.098
81.453
92.022
103.962
117.451
132.691
149.908
169.359
191.334
216.161
244.209
275.896
311.694

$$B(t) = 150 \exp(0.12t)$$

$$B(0) =$$

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

Time(hrs)

1

Case A
Case B

