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**Computer engineering**

**18/eng02/094**

**Engineering mathematics**

$t = 0, 1, 15$

$A(0) = 50 \text{ exp}(0.122 \cdot 0)$

$A(0) =$

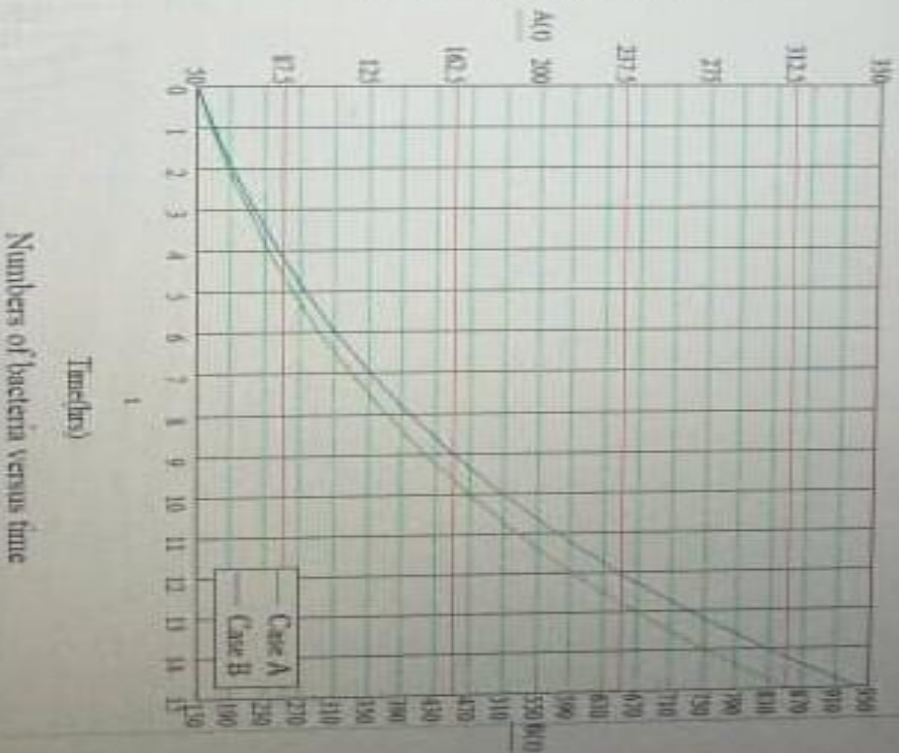
50
56,400
63,017
72,090
81,453
92,022
103,962
117,451
132,691
149,900
169,359
191,334
216,161
244,209
275,896
311,694

$B(0) = 150 \text{ exp}(0.122 \cdot 0)$

$B(0) =$

150
169,463
191,452
216,293
244,358
276,065
311,085
352,354
398,073
449,725
508,070
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

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

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

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

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

$$\therefore y_0 = 50 \quad \text{--- i}$$

$$y_0 = 150 \quad \text{--- ii}$$

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

$$\therefore y = 150 e^{kt} \quad \text{--- iv}$$

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

$$\ln 3 = \ln e^{k(9)}$$

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

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

$$9$$

$$k = 0.122$$

$$9 = e^{kt}$$

$$\ln 9 = \ln e^{k(18)}$$

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

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

$$18$$

$$k = 0.122.$$

$$\therefore y = 50 e^{0.122t} \quad \text{--- v}$$

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