19/04/2020

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18/ENG 04/061

$y = y_0 e^{kt}$

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

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

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

$\therefore y_0 = 50 \quad \ldots i$

$y_0 = 150 \quad \ldots ii$

$y = 50e^{kt} \quad \ldots iii$

$y = 150e^{kt} \quad \ldots$

$\therefore 3e^{kt}$

$\ln 3 = kt$

$\ln 3 = 9k$

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

$K = 0.122$

$9 = e^{kt}$

$\ln 9 = 18k$

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

$k = 0.122$

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

$\therefore y = 150e^{0.122t} \quad \ldots B$

$t := 0, 1 .. 15$

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

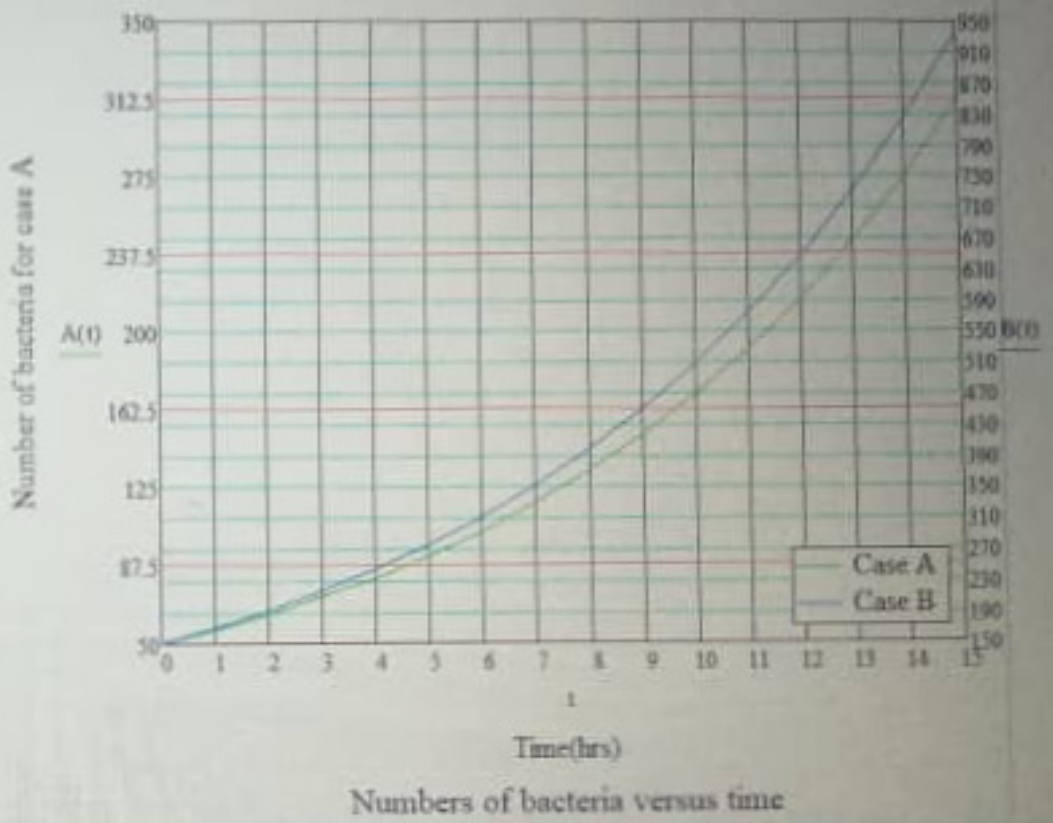
$B(t) := 150 \cdot \exp(0.122 \cdot t)$

$A(t) =$

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

help