

$$y = y_0 e^{kT} \rightarrow \text{from radioactivity}$$

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

Tripled bacteria

$$\frac{y}{y_0} = e^{kT} = 3 \quad \text{at } t = 9 \quad \text{--- (1)}$$

$$\frac{y}{y_0} = e^{kT} = 9 \quad \text{at } t = 18 \quad \text{--- (2)}$$

$$\therefore \text{Case A} \\ y_0 = 50$$

$$\therefore y = 50 e^{kT}$$

$$\text{from eqn (1)} \\ 3 = e^{kT} \quad \text{at } t = 9$$

$$\therefore \ln 3 = kT$$

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

$$k = 0.122$$

Case B

$$y_0 = 150$$

$$y = 150 e^{kT}$$

$$\text{from eqn (2)} \quad \text{at } t = 18 \\ 9 = e^{kT}$$

$$\ln 9 = kT$$

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

$$k = 0.122$$

$$\therefore y = 50 e^{0.122t} \quad \text{for case A}$$

$$y = 150 e^{0.122t} \quad \text{for case B}$$

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

 $t =$

$$y(t) = 50 \cdot e^{(0.122 \cdot t)}$$

$$I(t) = 150 \cdot e^{(0.122 \cdot t)}$$

0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

 $y(t) =$

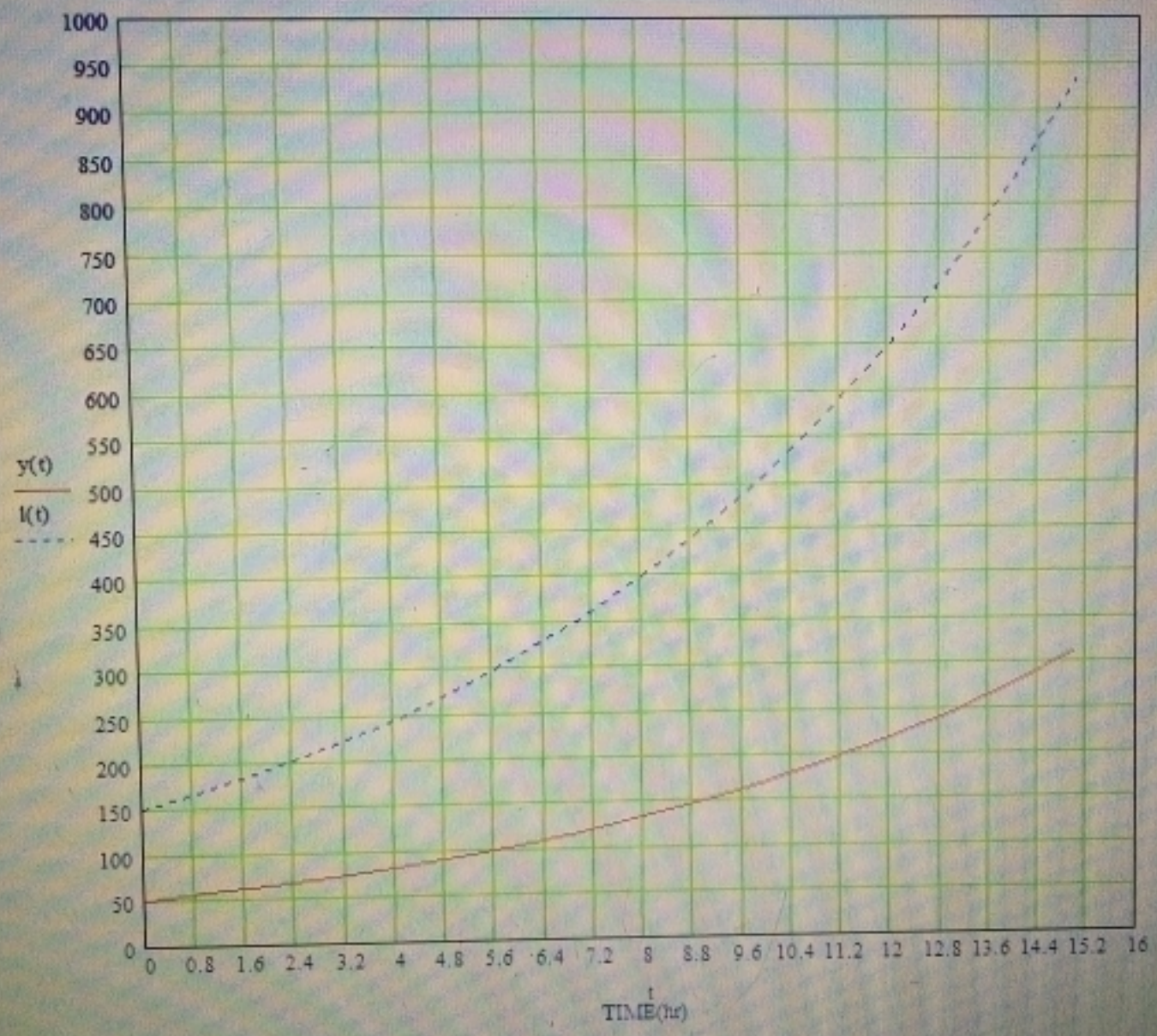
50
56.488
63.817
72.098
81.453
92.022
103.962
117.451
132.691
149.908
169.359
191.334
216.161
244.209
275.896
311.694

 $I(t) =$

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

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NUMBR OF BACTERIA OF CASE A



Math

Calculator icons: \int , $\frac{d}{dx}$, $\frac{d^2}{dx^2}$, $x = \int \frac{dy}{y}$, $\frac{d}{dx} \ln x$, $\frac{d}{dx} \alpha \beta$, $\frac{d}{dx} \frac{1}{x}$

Calculator

Calculator icons: $n!$, i , $m..n$, x_n , $|x|$, \ln , e^x , x^{-1} , x^y , $n\sqrt{\quad}$, \log , π , (\quad) , x^2 , $\sqrt{\quad}$, \tan , 7, 8, 9, /, \cos , 4, 5, 6, \times , \sin , 1, 2, 3, +, =, ., 0, -, =

Graph

Graphing icons: $\frac{d}{dx}$, $\frac{d^2}{dx^2}$, $\frac{d}{dx} \ln x$, $\frac{d}{dx} \alpha \beta$, $\frac{d}{dx} \frac{1}{x}$, $\frac{d}{dx} \frac{1}{x^2}$, $\frac{d}{dx} \frac{1}{x^3}$, $\frac{d}{dx} \frac{1}{x^4}$