

ALFA FATIMA AHMED

18/ENGO 6/008

CHEMICAL ENGINEERING

ENG 282

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

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

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

$$y_0 = 50 \text{ — (1)}$$

$$y_0 = 150 \text{ — (2)}$$

$$y = 50 e^{kt} \text{ — (3)}$$

$$y = 150 e^{kt} \text{ — (4)}$$

$$3 = e^{kt}$$

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

$$\ln 3 = k9$$

$$k = \frac{\ln 3}{9} = k = 0.122$$

$$9 = e^{kt}$$

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

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

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

$$k = 0.122$$

$$y = 50 e^{0.122t} \text{ — (5)}$$

$$y = 150 e^{0.122t} \text{ — (6)}$$

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Normal Arial 10 B I U

commandwindow

clearvars
clc
closeall

FOR CASE A

t := (0..15)

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

| t = | y(t) = |
|-----|---------|
| 0 | 50 |
| 1 | 56.488 |
| 2 | 63.817 |
| 3 | 72.098 |
| 4 | 81.453 |
| 5 | 92.022 |
| 6 | 103.962 |
| 7 | 117.451 |
| 8 | 132.691 |
| 9 | 149.908 |
| 10 | 169.359 |
| 11 | 191.334 |
| 12 | 216.161 |
| 13 | 244.209 |
| 14 | 275.896 |
| 15 | 311.694 |

FOR CASE B

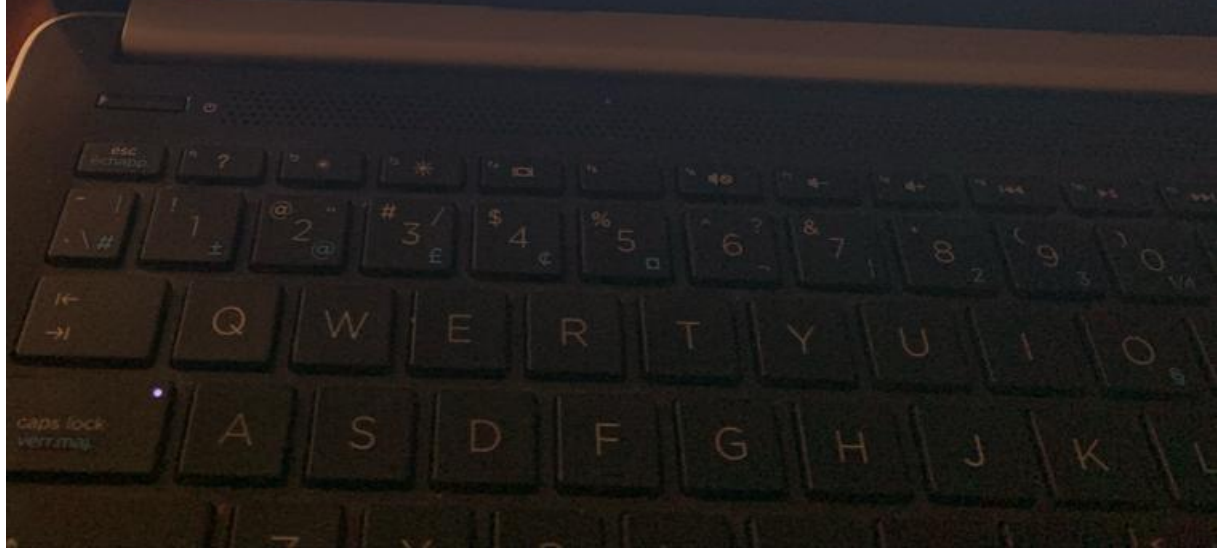
$$g(t) = 150 \cdot e^{0.122t}$$

| t = | g(t) = |
|-----|---------|
| 0 | 150 |
| 1 | 169.463 |
| 2 | 191.452 |
| 3 | 216.293 |
| 4 | 244.358 |
| 5 | 276.065 |
| 6 | 311.885 |
| 7 | 352.354 |
| 8 | 398.073 |
| 9 | 449.725 |
| 10 | 508.078 |
| 11 | 574.003 |
| 12 | 648.483 |
| 13 | 732.626 |
| 14 | 827.687 |
| 15 | 935.083 |

t := (0..15)
 $y(t) = 50 \cdot e^{0.122t}$
 $g(t) = 150 \cdot e^{0.122t}$



Press F1 for help.



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

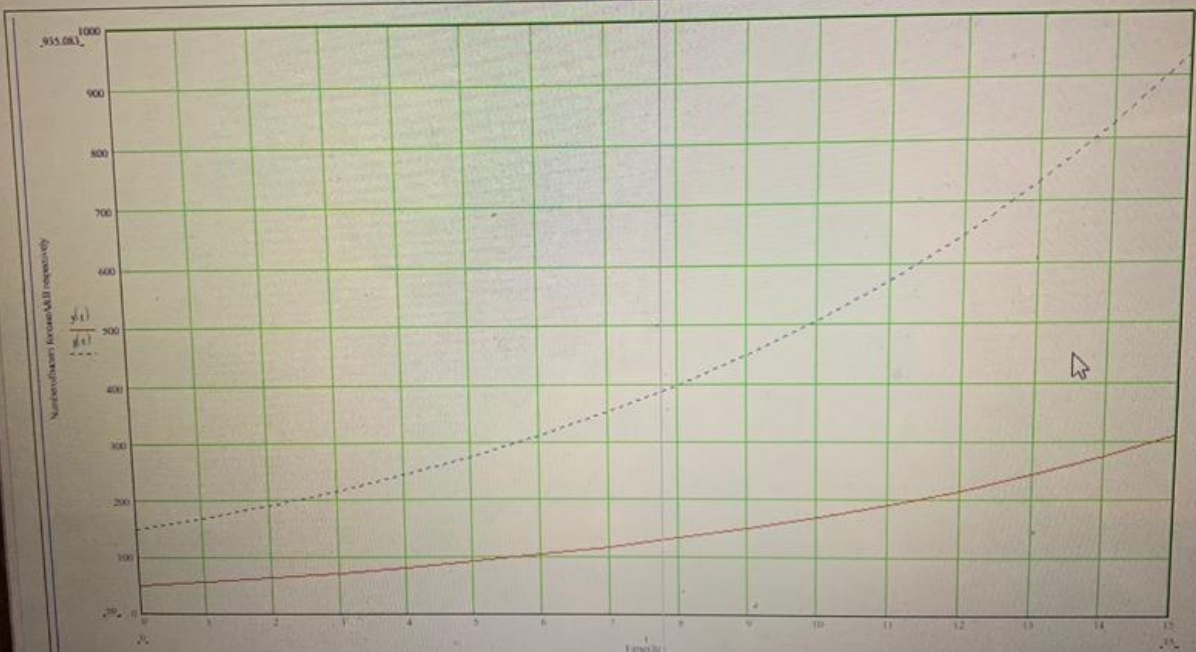


Figure 1: number of bacteria versus time

RED = CASE A
BLUE = CASE B

Press F1 for help.

