

OLOGBOSE ANTHONIA EFE

MECHATRONICS

18/ENG05/049

ENG 282

Case A:

$$y(t) = 50 \text{ at } t = 0 \text{ hr}$$

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

$$\therefore 50 = y_0 e^{k(0)}$$

$$50 = y_0 e^0$$

$$50 = y_0$$

To find k , $y = 50e^{kt}$

~~50~~ After 9 hours, $y(t) = 50 \times 3 = 150$

$$\therefore 150 = 50e^{9(k)}$$

$$3 = e^{9k}$$

$$1.0986 = 9k$$

$$k = 0.122$$

Hence,

$$y_A = 50e^{0.122t}$$

Case B:

$$y(t) = 150 \text{ at } t = 0 \text{ hr}$$

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

$$150 = y_0 e^{k(0)}$$

$$y_0 = 150$$

To find k , $y = 150e^{kt}$

After 9 hours, $y(t) = 150 \times 3 = 450$

$$\therefore 450 = 150e^{9k}$$

$$3 = e^{9k}$$

$$1.0986 = 9k$$

$$k = 0.122$$

Hence,

$$y_B = 150e^{0.122t}$$

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$$yA(t) := 50 \cdot [e^{(0.122 \cdot t)}]$$

$$yB(t) := 150 \cdot [e^{(0.122 \cdot t)}]$$

$$t := 0..15$$

Number of Bacteria versus time

