

UGWUAKU DNYEKACHI DANIEL

ELECT ELECT

18/ENG04/073

ENG 282 ASSIGNMENT 4

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

$$y = 3y_0, \quad y/y_0 = 3$$

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

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

$$A \quad y_0 = 50 \text{ --- (i)}$$

$$y_0 = 150 \text{ --- (ii)}$$

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

$$y = 150 e^{kt} \text{ --- (iv)}$$

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

$$\ln 3 = kt$$

$$\ln 3 = 9k$$

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

$$k = 0.122$$

$$B \quad \therefore 9 = e^{kt}$$

$$\ln 9 = kt$$

$$\ln 9 = 18k$$

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

$$k = 0.122$$

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

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

$$r = 0.1, 15$$

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

A(t) =

50
56.408
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

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

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

Number of bacteria for case A

