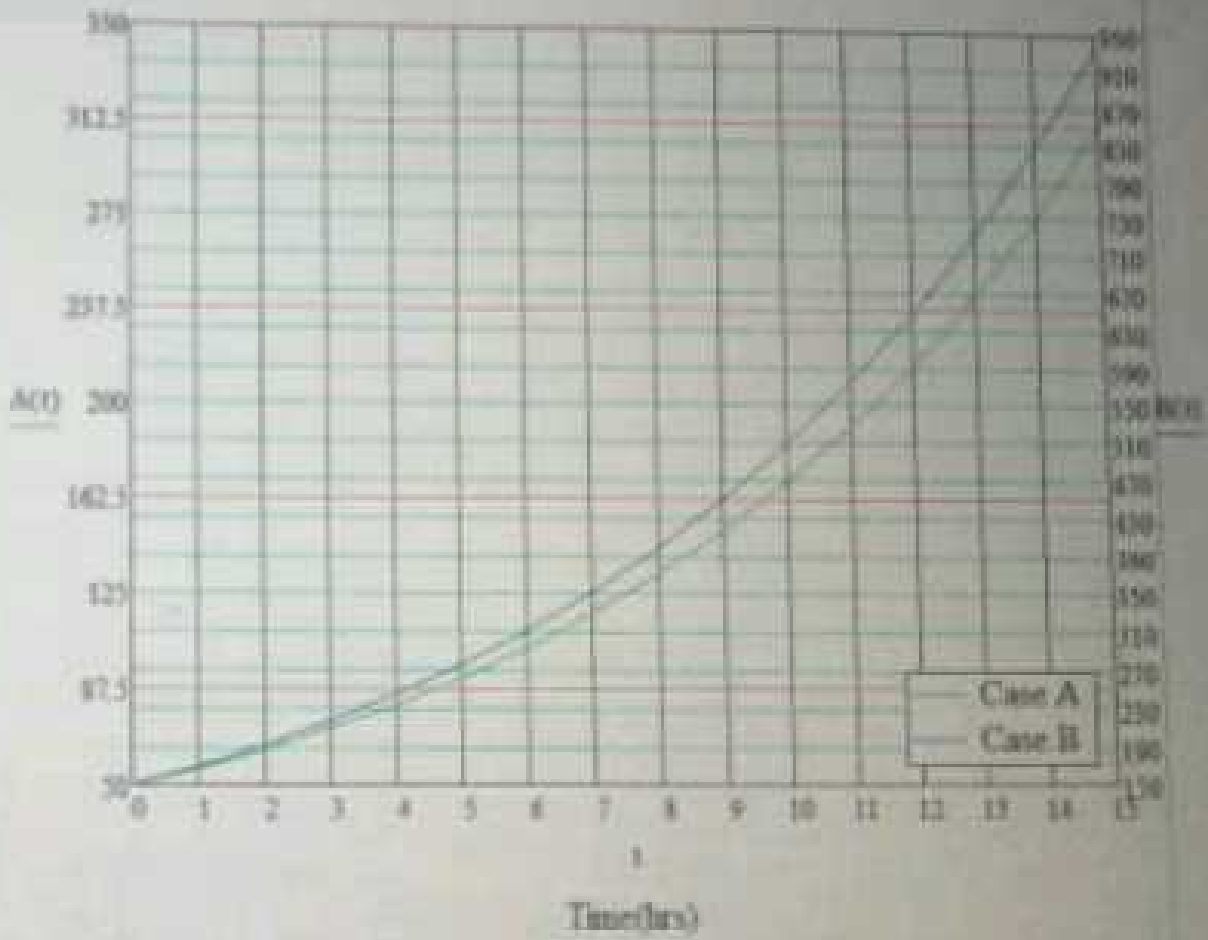


Number of bacteria for case A



Number of bacteria for case B

Numbers of bacteria versus time

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CALCULUS MATHEMATICS (ENGL 382)

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

$$y = 2y_0$$

$$y/y_0 = 2$$

$$a) \quad y/y_0 = e^{kt} = 2 \text{ at } t = 9$$

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

$$a) \quad y_0 = 50 \text{ --- (1)}$$

$$b) \quad y_0 = 150 \text{ --- (2)}$$

$$50y = 150 e^{kt} \text{ --- (1)}$$

$$y = 150 e^{kt} \text{ --- (2)}$$

$$\ln 3 = kt, \quad \ln 9 = 2kt$$

$$k = \ln 3 / 9$$

$$k = 0.122$$

$$y = e^{kt}$$

$$\ln 9 = 18k$$

$$\ln 9 / 18 = k$$

$$k = 0.122$$

$$y = 50 e^{0.122t} \text{ --- (a)}$$

$$\therefore y = 150 e^{0.122t} \text{ --- (b)}$$