

Question: Alvin Phillips
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Elect. Circuit

Assignment

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

where $C^{\text{th}} = 3$

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

$$y = y_0 \cdot 3$$

$$\frac{y}{y_0} = 3$$

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

$$A \text{ at } t=9, \frac{y}{y_0} = 3$$

$$B \text{ at } t=18, \frac{y}{y_0} = 9$$

Initially, cases A / $y_0 = 50$

cases B / $y_0 = 150$

$$\text{For } A, y = 50 e^{kt}$$

$$\text{for } B, y = 150 e^{kt}$$

equal rate $S = e^{kt}$

$$\ln S = kt$$

For A, $t = 9$

$$\ln S = k \times 9$$

$$k = \frac{\ln S}{9} = 0.1221$$

7

for B, $t = 18$

$$7 = e^{kt}$$

$$\ln 7 = kt$$

$$k = \frac{\ln 7}{18} = 0.1221$$

$$\therefore y = 50 e^{0.1221t}$$

$$y = 150 e^{0.1221t}$$

(A)

(B)