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ENG 282

18/ENG04/065 Electrical/Electronics Engineering

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

$y = 3y$

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

$y = 3 \times y_0$

$y_0 = \text{initial substance}$

$y = \text{final substance}$

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

$y_0 = 50$ — ①; $y = 50 e^{kt}$

$y_0 = 150$ — ②; $y = 150 e^{kt}$

e^{kt} = exponential (constant $\times t$)

$e^{kt} = 9$

$\ln 9 = kt$

$\ln 9 = 9k$

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

$e^{kt} = 9$

$\ln 9 = 18k$

$k = \frac{\ln 9}{18} = 0.1221$

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

$y = 50 e^{0.1221t}$

$$t = 0, 1, 15$$

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

$$A(t) =$$

50
56.488
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

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

$$B(t) =$$

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

