

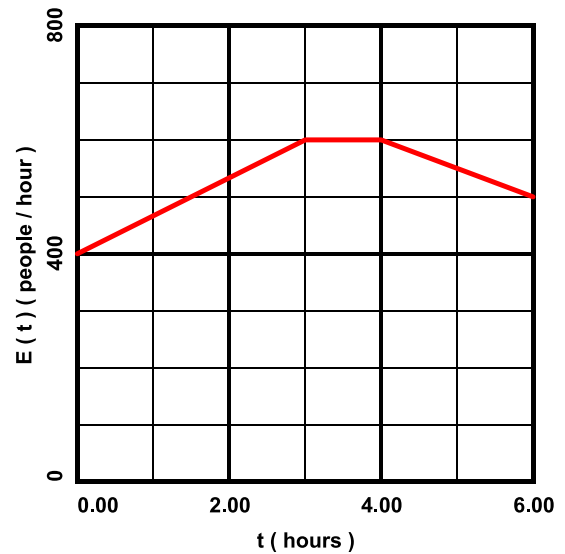
- 1) Verify the integral

$$\int t^2 e^{-t/5} dt =$$

$$= -5 \left(t^2 e^{-t/5} + 10t e^{-t/5} + 50e^{-t/5} \right)$$

by differentiation.

- 2) The graph of
- $E = E(t)$
- shown



gives the number of people per hour that enter an amusement park from noon ($t = 0$) until 6:00pm ($t = 6$). During that same time period, the number of people leaving the park $L = L(t)$, in people per hour, is given by

$$L = 50 \left(2 + t^2 e^{-t/5} \right).$$

If at noon there were 3000 people in the park, how many are in the park at 6:00pm? You will need to use the integral from problem 1.