

For full credit you must (NEATLY) show your work. Partial credit may be given for incorrect solutions if sufficient work is shown.

A study found that the average learning rate for students at different times during a 5 hour study session was inversely proportional to the (square of) time spent studying.

$$V'(t) = \frac{15}{t^2}$$

where $V(t)$ is the average number of words memorized at time t .

1. Find $V(t)$. Your answer should include a constant of integration, C .

$$V(t) = \int V'(t)dt = \int \frac{15}{t^2}dt = 15 \int t^{-2}dt = 15 \frac{t^{-1}}{-1} + C = \boxed{-\frac{15}{t} + C}$$

2. Find $V(t)$ given that $V(1) = 15$.

$$V(1) = 15 \implies -\frac{15}{1} + C = 15 \implies C = 15 + 15 \implies \boxed{C = 30}$$

$$V(t) = -\frac{15}{t} + 30.$$

3. Find the average number of words memorized after 4 hours of studying, $V(4)$.

$$V(4) = -\frac{15}{4} + 30 \implies \boxed{V(4) = 26.25}$$