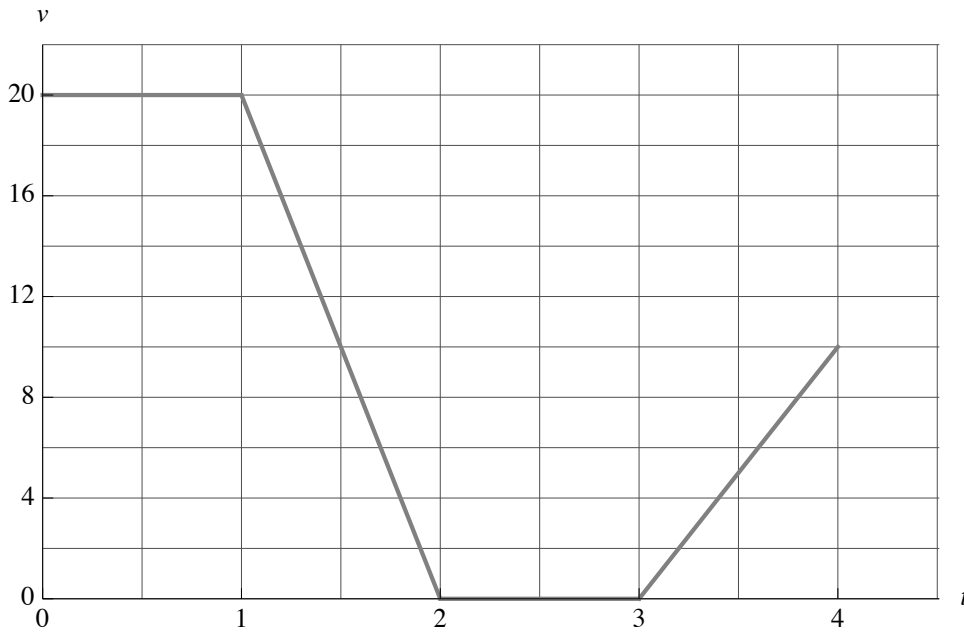


Average Velocity (on a Velocity Graph)

Part 1: Dijin's Travels

Dijin is late to his calculus class again! However, he is in no hurry. Below is a graph of the *velocity* (in meters per minute) Dijin travels during the first 4 minutes of his journey.



1. Estimate Dijin's velocity at $t = 3.5$ minutes.
2. What are the appropriate units for the area under the curve? Why?
3. What does the area under a velocity curve represent?
4. How far does Dijin travel during the first 4 minutes of his journey?
5. What is Dijin's average velocity during the first 4 minutes?
6. On the graph above, sketch the line $y = \text{avg velocity}$ (from question 5) and shade the area under the average velocity curve. What shape is this?
7. How many times did Dijin travel at his average velocity during the first 4 minutes of his journey? Justify your answer.
8. If Dijin's initial position was 100 meters away from his calculus classroom and he continues to travel at the same rate he was traveling when $t = 4$, sketch a graph of his velocity. How many minutes will it take him to get to class?

Continued on back...

Part 2

Due to eye-fatigue, a person's reading rate decreases after 2 hours. The rate (in words per hour) of a certain reader is represented by the piecewise-defined function below.

$$\text{reading rate} = \begin{cases} 6000 & \text{for } 0 \leq t \leq 2 \text{ hours} \\ 7000 - 500t & \text{for } t > 2 \text{ hours} \end{cases}$$

1. Sketch a graph of this reading rate model.
2. According to this model, how many words can this person read in 5 hours? How did you obtain your answer?
3. What is the average number of words per hour this person reads over a five-hour interval?

