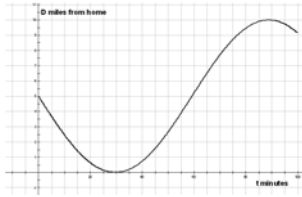


1. The HW Graph represents 100 minutes of Eugene's bike trip.



Small HW Graph  
Use large version for work  
Download more than copy from hw page as needed

**Calculus Concepts:** Secant Line Average Rate of Change Tangent Line Derivative:  $D'(t)$

- Give two time intervals where Eugene's average speed is 9 mph. Which calculus concept does this relate to? Sketch one line relating to this concept; label it  $a$ . What is the equation of this line?
- Are there any hour intervals where Eugene's average velocity is 0 mph? Which calculus concept does this relate to? Explain carefully, sketch and label any corresponding lines on the graph  $b$ .
- Are there any half-hour intervals where Eugene's average velocity is 0 mph? Which calculus concept does this relate to? Explain carefully, sketch and label any corresponding lines on the graph  $c$ .
- What is Eugene's velocity, in mph, at  $t = 40$ ? Which calculus concept does this relate to? Sketch the appropriate line relating to this concept on the graph; label it  $d$ . What is the equation of this line?
- When is  $D'(t) = 0$ ? What does this mean in practical terms? Which calculus concept does this relate to? Sketch the appropriate lines relating to this concept on the graph; label them  $e$ . What are the equations of these lines?
- Find the two places where Eugene's speed is approximately 12 mph. Which calculus concept does this relate to? Sketch the appropriate lines relating to this concept on the graph; label them  $f$ . What are the equations of these lines?
- When is Eugene going the fastest and towards his house? How do you know? Explain. Approximately how fast is he going? Which calculus concept does this relate to? Sketch the appropriate line relating to this concept on the graph; label it  $g$ .
- When is Eugene going faster and faster? Which calculus concept does this relate to?
- When is Eugene going slower and slower? Which calculus concept does this relate to?
- Write a story for the first 100 minutes of Eugene's bike ride. Please be sure to be precise on what you are saying (Speeding up, turning around, time intervals for each....).

**HW Graph**

