Lesson 2.3.2

2-112. See below:

a. See table and graph below.

	Eric	Samantha	Kirt	Lisa	Joshua	collision
time	0 sec	11 sec	22 sec	29 sec	34 sec	??
distance	0 ft	142 ft	569 ft	990 ft	1357 ft	1760 ft
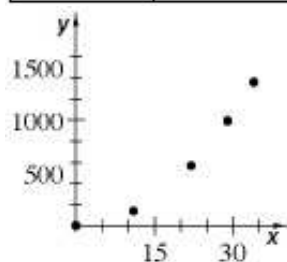
b. See teacher notes.

c. ≈ 38.7 sec

d. $v(38.7) \approx 90.8$ ft per sec ≈ 61.9 mph; Sadly, she does not qualify for the insurance.

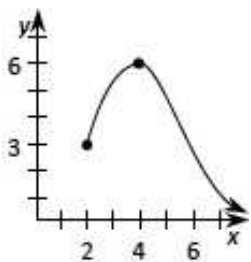e. The steeper the graph, the faster she travels.

2-113. See below:

a. She is zoomed in closely at $x = 0$.

b. Answers vary but students will notice that most functions appear to be locally linear.

c. Answers vary, but $y = |x|$ is a good candidate.

Review & Preview

2-114. See graph below.

2-115. See below:

   a. $v = 1, -1.5, 1$

   b. Yes, at ≈ 0.5, 2.5, and 3.75 seconds; the graph changes direction.

   c. (0.5, 2.5) and (3.75, 4.75)

2-116. Between 473 and 496; 484.5 using trapezoids.

2-117. Using left endpoint rectangles: for $n = 10$, $A \approx 7558.750$ units^2; for $n = 20$, $A \approx 7790.313$ units^2; for $n = 100$, $A \approx 7977.813$ units^2; as the number of rectangles increases, the area approaches the actual area.

2-118. See below:

   a. 6

   b. 2

   c. 0

   d. $-\infty$

   e. DNE

   f. 0

2-119. See below:

   a. 5.590 sec

   b. −160 ft/sec

2-120. See below:

   a. hole

   b. not possible

   c. jump

2-121. A cylinder with a hole; 9π units^3