

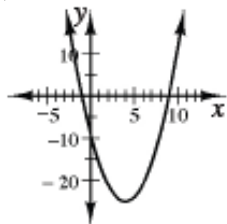
Lesson 1.1.3

1-26. See below:

- a. Yes, -16 has no real number square root.
- b. The domain is all positive numbers and zero.
- c. Her logic makes sense—the output of $g(x)$ will always be either negative or zero, because the result of squaring will always be positive or zero.
- d. The range is all negative numbers and zero.

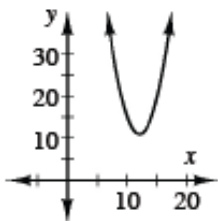
1-27. See below:

- a. See graph below. A parabola with vertex $(4, -25)$, x -intercepts $(-1, 0)$ and $(9, 0)$, and y -intercept $(0, -9)$.



- b. Sample answer: x min = -3 , x max = 11 , y min = -30 , y max = 10
- c. Sample answer: Window settings include at least the key points and should include the domain and/or range when they do not go to infinity.

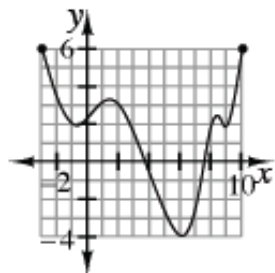
1-28. Graph shown below:



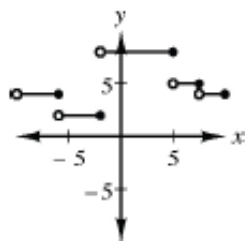
- a. No graph is visible.
- b. Sample answer: x min = 0 , x max = 40 , y min = 0 , y max = 40 .
- c. Domain: all real numbers, range: all real numbers greater than and including 11 .

1-29. See below:

- a. Possible graph shown below.

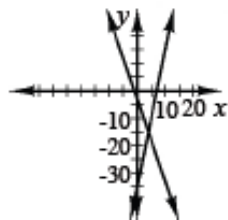


- b. Possible graph shown below.



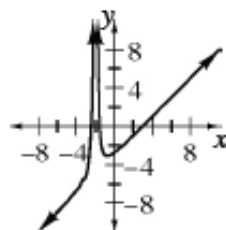
1-30. See below:

- a. No.
- b. Sample window: $x \text{ min} = 0$, $x \text{ max} = 5$, $y \text{ min} = -20$, $y \text{ max} = 5$
- c. $(4, -15)$, graph shown below.



- d. Answers vary.

1-31. Graph shown below; x -intercepts $(\approx -2.43, 0)$, $(\approx -1.53, 0)$, and $(\approx 2.96, 0)$; y -intercept $(0, -2.75)$; $D: x \neq -2$; R : all real numbers.

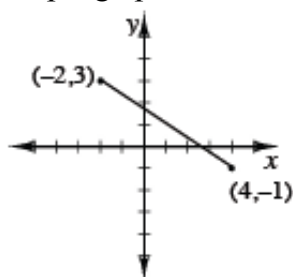


1-32. In the graph below, $y = \frac{1}{x} - 4$ is solid and $y = \frac{1}{x-4}$ is dotted. The graphs are not the same because the two equations do not have the same solutions. For example, $(1, -3)$ is a solution to the first equation, but $(1, -\frac{1}{3})$ is a solution to the second equation.



1-34. See below:

- a. The numbers between -2 and 4 inclusive.
- b. The numbers between -1 and 3 inclusive.
- c. No. He is missing all the values between those numbers. The curve is continuous, so the description needs to include all real numbers, not just integers.
- d. Sample graph shown below.



1-35. See below:

- a. 70
- b. 2
- c. 43
- d. undefined
- e. $3x^2 = \sqrt{x-5} - 3$
- f. $3x^2 = \sqrt{x-5} + 7$
- g. all real numbers
- h. all real numbers greater than or equal to 5.
- i. They are different because the square root of a negative is undefined, whereas any real number can be squared.

1-36. Chelita is correct about *how* to find the intercepts, but she makes an error with signs while factoring. The correct equation is $(x - 7)(x - 3)$ and the x -intercepts are 7 and 3.

1-37. See below:

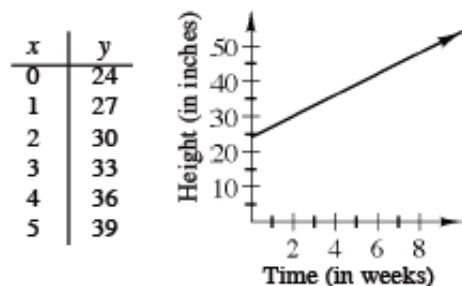
- a. $y = \frac{x-6}{3}$
- b. $y = \frac{x+10}{5}$
- c. $y = \pm\sqrt{x}$
- d. $y = \pm\sqrt{\frac{x+4}{2}}$
- e. $y = \pm\sqrt{x} + 5$

1-38. See below:

- a. -7
- b. 3.5
- c. The x - and y -intercepts.

1-39. See below:

- a. $y = 3x + 24$, table and graph shown below.



- b. At 16 weeks. You can see this in the table and graph where $y = 72$. You can see this in the equation by substituting 72 for y and solving for x .
- c. Possible inputs: all real numbers greater than and including 0, possible outputs: all real numbers greater than and including 24

1-40. See below:

- a. $x = 13$
- b. $x = 8$