

**1-52. See below.**

- a.  $\approx -3.7$
- b.  $-3, 2$
- c.  $\approx -2.3, 0, 3.3$
- d. No; some inputs have multiple output values.

**1-53. See below.**

- a.  $-1, -2, -6$
- b. There is no solution because you cannot divide by 0.
- c. No; the error occurs when the denominator is 0, and 3 is the only value that causes that to happen.
- d. All real numbers except  $x = 3$ .
- e. Possible response: Square root. Values of  $x$  that make the expression inside the square root negative are not allowed.

**1-54. See below.**

- a. Yes; each input has exactly one output.
- b. D:  $-2 \leq x \leq 4$
- c. R:  $-1 \leq y \leq 3$
- d. No; he is missing all the values between those numbers. The curve is continuous, so our description needs to include all the numbers, not just the integers.

**1-55.** While students will describe these with words, we have provided some solutions using inequality notation due to space considerations. Parts (b), (c), (d), and (f) are functions. The others are not. See solutions below.

- a. D:  $-3 \leq x \leq 3$ , R:  $-3 \leq y \leq 3$
- b. D: all real numbers, R: all real numbers
- c. D:  $-2 \leq x \leq 4$ , R:  $-4 \leq x \leq 2$
- d. D: all real numbers, R:  $y \leq 4$
- e. D:  $2 \leq x \leq 4$ , R:  $-3 \leq y \leq 2$
- f. D:  $x \geq 0$ , R:  $y \geq 3$

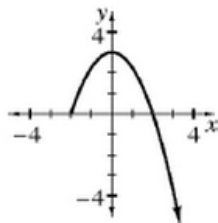
**1-56. See below.**

- a. No; we do not know about the numbers between the integers or those beyond the table. See note in the "Suggested Lesson Activity". If this table describes the *entire*  $f(x)$  function, then the domain is the integers from 0 to 5.
- b. No. The range could just consist of the integers 1, 2, 4, 8, 16, and 32.
- c. no

1-57. See below.

- a. all real numbers
- b. all  $y$ -values greater than  $-2$

1-58. Although many solutions are possible, one possible solution is graphed below.



1-59. See below.

- a. yes
- b.  $-6 \leq x \leq 6$
- c.  $-4 \leq y \leq 4$

1-60. See below.

- a. 3
- b. 12
- c. 3

1-61. See below.

- a. 1
- b.  $\frac{1}{625}$
- c. 0
- d. 2

1-62. See below.

- a. Yes, it is correct because the two angles make up a  $90^\circ$  angle.
- b.  $x = 33^\circ$ , so one angle is  $33 - 10 = 23^\circ$  while the other is  $2(33) + 1 = 67^\circ$ .
- c.  $23^\circ + 67^\circ = 90^\circ$

1-63. See below.

- a.  $\approx 9465$  people per square mile
- b.  $\approx 5.4$  billion people