Lesson 5.2.2

5-68. See entries in the table below.

| x	8	32	$\frac{1}{2}$	1	16	4	3	64	2	0	0.25	–1	$\sqrt{2}$	0.2	$\frac{1}{8}$
$g(x)$	3	5	–1	0	4	2	~1.6	6	1	n/a	–2	n/a	$\frac{1}{2}$	~–2.3	–3

a. $x = 2^y$ or $y =$ the exponent needed to get x when the base is 2.

b. Sample answer: $g(x) = \log_2 x$

c. Neither 0 nor –1 can be expressed as a power of 2.

d. $y = 4.64$

5-69. See below:

a. See answers in table below.

x	8	32	$\frac{1}{2}$	1	16	4	3	64	2	0	0.25	–1	$\sqrt{2}$	0.2	$\frac{1}{8}$
$g(x)$	3	5	–1	0	4	2	~1.6	6	1	n/a	–2	n/a	$\frac{1}{2}$	~–2.3	–3

b. See answers in table above.

c. $g(x)$ increases slowly.

d. It is a reflection across $y = x$. See graph below.
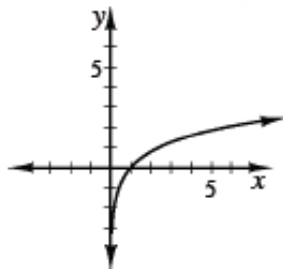
5-70. See below:

a. 5; $2^5 = 32$

b. $-1; 2^{-1} = \frac{1}{2}$

c. $2; 2^2 = 4$

d. not possible; 2^x cannot $= 0$

e. $8; 2^3 = 8$

f. $\sqrt{2}; 2^{1/2} = \sqrt{2}$

g. $-4; 2^{-4} = \frac{1}{16}$

h. $1; 2^0 = 1$

5-71. See below:

a. $y = 9^x$

b. $y = \log_{10}x$

c. $y = 6x - 1$

d. $y = \frac{1}{2}\log_5 x$

5-72. See below:

a. 2

b. 4

c. 7

d. 1.2

e. $w + 3$

Review & Preview

5-73. $x = 2^y$, no, yes, yes; They have the same graph or give the same table of (x, y) values, or one is just a rewritten equation of the other.

5-74. See below:

a. $x = \log_5(y)$

b. $x = 7^y$

c. $x = \log_8(y)$
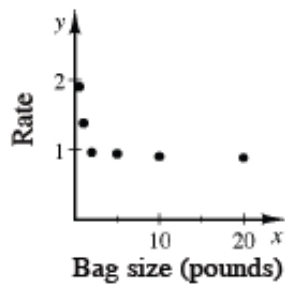
d. $K = \log_A(C)$

e. $C = A^K$

f. $K = (\frac{1}{2})^N$

5-75. See below:

a. $1.90, 1.38, 0.96, 0.94, 0.90, 0.88

b. decrease

c. Smaller size. Note: Sketching a graph of rate with respect to bag size like the one below may help here.

5-76. Possible answers listed below:

a. Factor and use the Zero Product Property (rewrite), (–8, 0) and (1, 0)

b. Take the square root (undo)
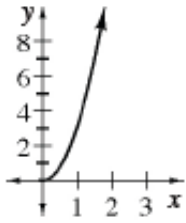
c. Quadratic Formula

d. Complete the square (rewrite)

5-77. $x = -4$
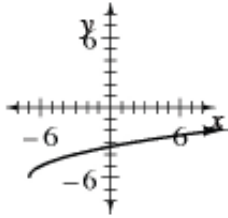
5-78. See below:

a. $x = 17\sqrt{3} \approx 29.44$

b. $x = 4\sqrt{2} \approx 5.66$

5-79. Since $A = \pi r^2$, $f(r) = \pi r^2$. See graph below. domain: $x \geq 0$, range: $y \geq 0$, x- and y-intercept: (0, 0), no asymptotes, half of parabola: $y = \pi x^2$

5-80. See below:

a. A good sketch would be a parabola opening upwards with a locator point at $(-6, -7)$.

b. Shift the graph up 9 units.

c. The graph is the same except the region below the x-axis is reflected across the axis so that the graph is entirely above the x-axis.

d. See graph below.

e. $y = \sqrt{x+7} - 6$