Name ______________________ Date ___________ Class ___________

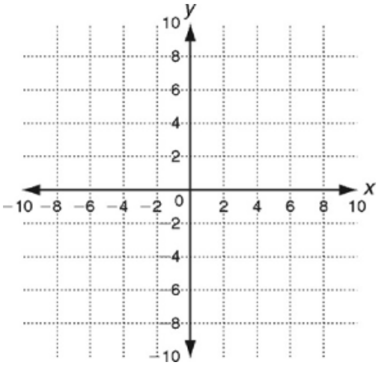
LESSON 10-2

Graphing Square Root Functions

Practice and Problem Solving: A/B

Graph each function, and identify its domain and range.

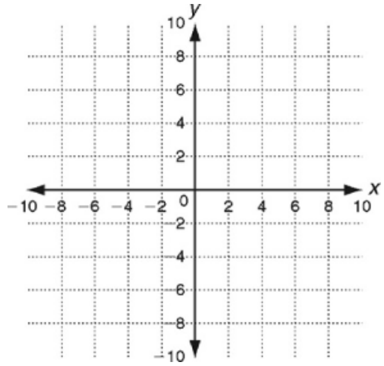
1. $f(x) = \sqrt{x-4}$



Domain: ________________

Range: ________________

2. $f(x) = 2\sqrt{x} + 1$



Domain: ________________

Range: ________________

Using the graph of $f(x) = \sqrt{x}$ as a guide, describe the transformation.

3. $g(x) = 4\sqrt{x+8}$ ________________________________

4. $g(x) = -\sqrt{3x} + 2$ ________________________________

Use the description to write the square root function *g*.

5. The parent function $f(x) = \sqrt{x}$ is reflected across the *y*-axis, vertically stretched by a factor of 7, and translated 3 units down. ________________

6. The parent function $f(x) = \sqrt{x}$ is translated 2 units right, compressed horizontally by a factor of $\frac{1}{2}$, and reflected across the *x*-axis. ________________

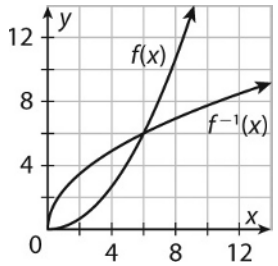
Solve.

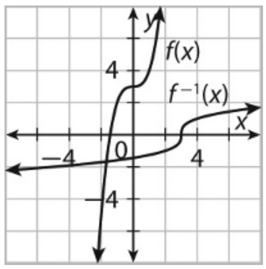
7. The radius, *r*, of a cylinder can be found using the function $r = \sqrt{\frac{V}{\pi h}}$, where *V* is the volume and *h* is the height of the cylinder.

   a. Find the radius of a cylinder with a volume of 200 cubic inches and a height of 4 inches. Use $\pi = 3.14$. Round to the nearest hundredth. ________________

   b. The volume of a cylinder is doubled without changing its height. How did its radius change? Explain your reasoning. ________________

Practice and Problem Solving: Modified

1. $f(0) = 0$; $f(3) = 1.5$; $f(6) = 6$
2. $f^{-1}(x) = \sqrt{6x}$
3. $f^{-1}(0) = 0$, $f^{-1}(1.5) = 3$, and $f^{-1}(6) = 6$.
4. 

5. $f(-1) = 2$; $f(0) = 3$; $f(1) = 4$
6. $f^{-1}(x) = \sqrt[3]{x-3}$
7. $f^{-1}(2) = -1$, $f^{-1}(3) = 0$, and $f^{-1}(4) = 1$
8. 

9. $s = \sqrt{A}$
10. $s = \sqrt{121} = 11$ units

Reading Strategies

1. a. $g(x)$

   b. $\{x|x \geq 0\}$
2. $f(x)$
3. a. $f^{-1}(x) = \sqrt[3]{x+5}$

   b. $g^{-1}(x) = \sqrt{\dfrac{x}{12}}$ or $\dfrac{1}{6}\sqrt{3x}$

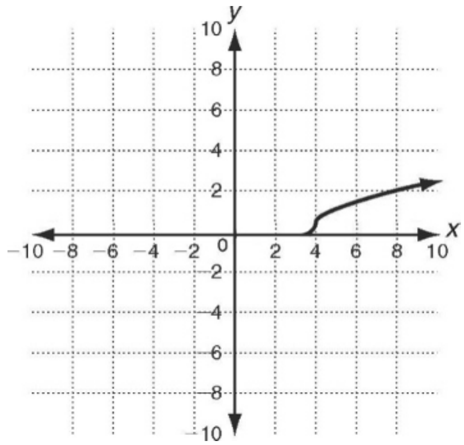
Success for English Learners

1. No; Possible explanation: A cube root function is defined for all real number values of x.
2. Possible answer: I could find the inverse of the inverse, since the inverse of the inverse of a function is the original function.

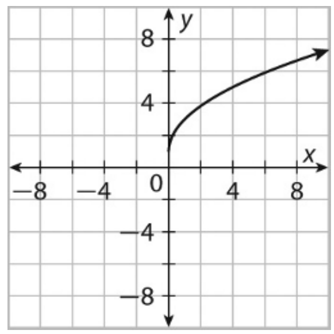
LESSON 10-2

Practice and Problem Solving: A/B

1. $\{x \mid x \geq -4\}$; $\{y \mid y \geq 0\}$



2. $\{x \mid x \geq 0\}$; $\{y \mid y \geq 1\}$



3. Vertical stretch by a factor of 4 and horizontal translation 8 units left
4. Reflection across the x-axis, horizontal compression by a factor of $\dfrac{1}{3}$, and vertical translation 2 units up
5. $g(x) = 7\sqrt{-x} - 3$
6. $g(x) = -\sqrt{2(x-2)}$
7. a. $r = \sqrt{\dfrac{50}{\pi}} \approx 3.99$ inches

   b. If volume goes from V to $2V$, radius must go from $r = \sqrt{\dfrac{V}{\pi h}}$ to $r_{\text{new}} = \sqrt{\dfrac{2V}{\pi h}} = \sqrt{2}\sqrt{\dfrac{V}{\pi h}} = \sqrt{2}r$. So, the radius must be multiplied by $\sqrt{2}$.