

Chapter 2 Prerequisite Skills

1. Express each power as an equivalent radical.

a) $x^{\frac{2}{3}}$ b) $45^{0.5}$

c) $\left(\frac{1}{24}\right)^{\frac{3}{2}}$ d) $(g^3)^{\frac{1}{2}}$

2. Express each radical as a power.

a) $\sqrt{x^5}$ b) $\sqrt[3]{x^3}$

c) $\sqrt[3]{x^2y^2}$ d) $a^3b\sqrt{xy^5}$

3. Convert each mixed radical to an equivalent entire radical.

a) $3\sqrt{6}$ b) $5\sqrt[3]{2}$

c) $-4\sqrt{5}$

4. Convert each entire radical to a mixed radical in simplest form.

a) $\sqrt{40}$ b) $\sqrt[3]{18a^3}$

c) $-\sqrt{75b^9}$ d) $\sqrt[3]{54x^9y^6}$

5. Evaluate without the aid of a calculator.

a) $\sqrt{225}$ b) $\sqrt[3]{125}$

c) $\sqrt{4900}$ d) $\sqrt[3]{8000}$

6. Express each product in simplest form.

a) $(\sqrt{3})(\sqrt{6})$

b) $(3x^2\sqrt{x})(-2x\sqrt{x})$

c) $(4\sqrt{3}-7)^2$

d) $(3\sqrt{x}-5\sqrt{y})(\sqrt{x}+2\sqrt{y})$

7. Identify any restrictions on the variable in each expression or equation.

a) $7\sqrt{x}$

b) $8\sqrt{x-4}$

c) $\frac{5x+1}{x\sqrt{x+2}}$

d) $\sqrt{z}-4=5$

e) $-2\sqrt{3x+1}=4$

f) $d-1=\sqrt{3d+5}$

8. State whether each equation is true or false. If false, rewrite the equation so it is true.

a) $\sqrt{25}=\pm 5$

b) $(-3)^2=-9$

c) $-2^2=4$

9. Solve each radical equation.

a) $5-\sqrt{3x}=1$

b) $\sqrt{4x+1}+3=8$

c) $\sqrt{x^2}=x$

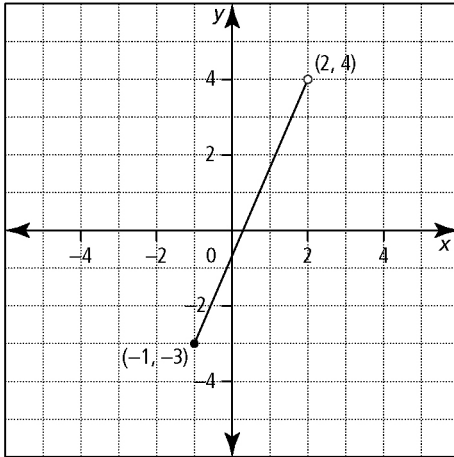
d) $\sqrt{7y+25}-y=1$



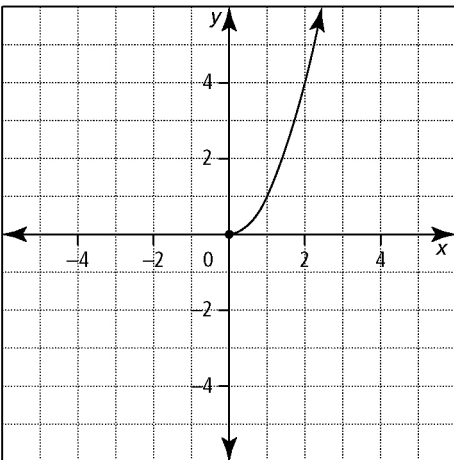
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10. Determine the domain and range of the function shown in each graph.

a)



b)



11. Express each domain using another notation.

a) $\{x \mid x \geq -2, x \in \mathbb{R}\}$

b) $\{x \mid -5 < x \leq 3, x \in \mathbb{R}\}$

c) $[1.4, 6]$

d) $(\infty, 4)$

12. Sketch the graph of a function having a domain of $(-3, 2]$ and a range of $(0, 5]$.

13. Solve each equation for n . Leave each answer in simplest radical form.

a) $7n - 3 = -4(n - 1) + 5$

b) $2n^2 - n - 3 = 0$

c) $n^2 = 4n + 6$



Section 2.1 Extra Practice

1. Graph each function using a table of values. Then, identify the domain and range.

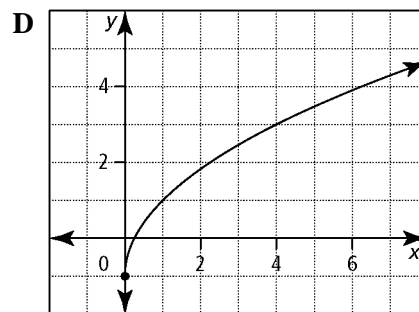
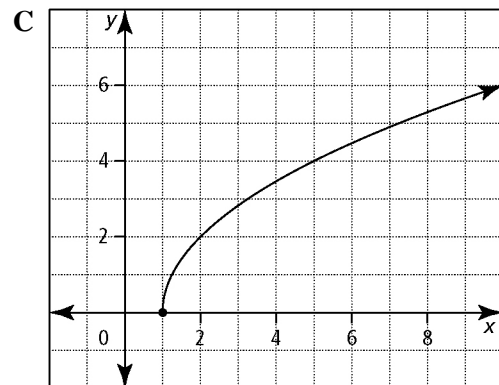
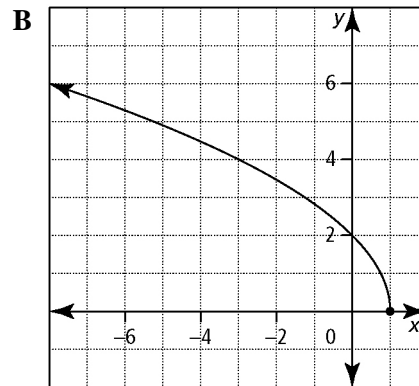
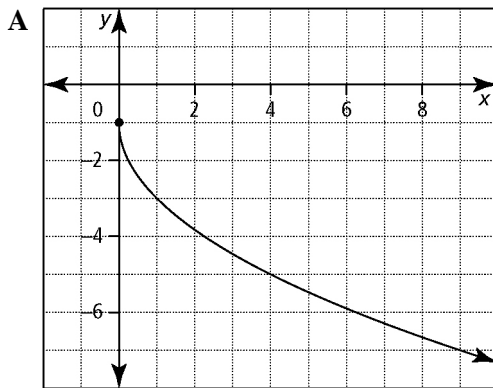
a) $y = \sqrt{x+2}$
 b) $y = \sqrt{x} - 4$
 c) $y = \sqrt{5-x}$
 d) $y = \sqrt{-3x+1}$

2. Explain how to transform the graph of $y = \sqrt{x}$ to obtain the graph of each function. State the domain and range in each case.

a) $y = 3\sqrt{x-5}$
 b) $y = -\sqrt{x} + 7$
 c) $y = 0.25\sqrt{0.25x} - 3$
 d) $5 + y = \sqrt{-(x+1)}$

3. Match each function with its graph.

a) $y = 2\sqrt{x} - 1$
 b) $y = -2\sqrt{x} - 1$
 c) $y = 2\sqrt{x-1}$
 d) $y = 2\sqrt{-(x-1)}$



4. Write the equation of a radical function that would result by applying each set of transformations to the graph of $y = \sqrt{x}$.
- a) vertical stretch by a factor of 3, and horizontal stretch by a factor of 2
 b) horizontal reflection in the y -axis, translation up 3 units, and translation left 2 units



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 (continued)

- c) vertical reflection in the x -axis, horizontal stretch by a factor of $\frac{1}{3}$, and translation down 7 units
- d) vertical stretch by a factor of 5, horizontal stretch by a factor of 0.25, and translation right 6 units

5. Explain how to transform the graph of

$y = \sqrt{x}$ to obtain the graph of each function.

a) $y = 5\sqrt{x+7} - 2$

b) $y = -4\sqrt{-x} + 8$

c) $y = \sqrt{0.25(x-1)}$

d) $y + 3 = \sqrt{\frac{1}{3}(x+4)}$

6. Sketch each set of functions on the same graph.

a) $y = -\sqrt{x}$, $y = -\sqrt{x-3} + 5$

b) $y = 4\sqrt{x}$, $y = 4\sqrt{\frac{1}{3}x}$

c) $y = -\sqrt{x}$, $y = -\sqrt{2x}$

7. Sketch the graph of each function using transformations.

a) $y = 2\sqrt{x-4} - 5$

b) $y = -3\sqrt{x} + 6$

c) $y = -\sqrt{0.5x} + 1$

d) $y - 9 = \sqrt{2(x+3)}$

8. State the domain and range of each function.

a) $y = \sqrt{-x} - 4$

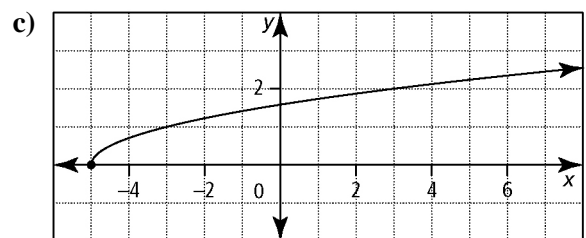
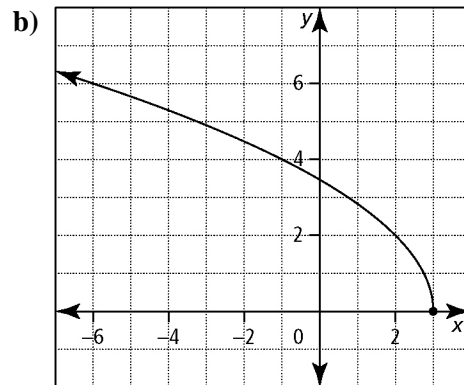
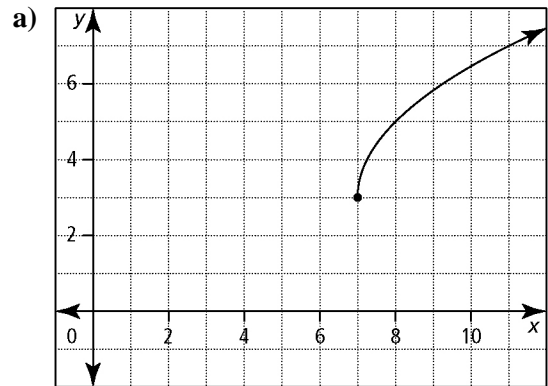
b) $y = 4\sqrt{x-4}$

c) $y - 4 = -\sqrt{x-4}$

d) $y = -\sqrt{4x}$

9. For each function, write an equation of a radical function of the form

$$y = a\sqrt{b(x-h)} + k.$$



10. Explain how to transform the graph of $y = \sqrt{x}$ to obtain the graph of each function.

a) $y = \sqrt{-x-7}$

b) $y = \sqrt{2x-6} + 5$

c) $y - 7 = \sqrt{5-x}$

