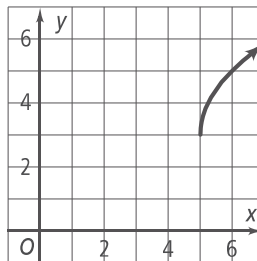## 6-8 Reteaching

### Graphing Radical Functions

The graph of $y = a\sqrt{x - h} + k$ is a translation $h$ units horizontally and $k$ units vertically of $y = a\sqrt{x}$. The value of $a$ determines a vertical stretch or compression of $y = \sqrt{x}$.

**Problem**

What is the graph of $y = 2\sqrt{x - 5} + 3$?

$$y = 2\sqrt{x - 5} + 3$$
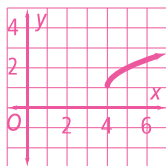
$$a = 2 \quad h = 5 \quad k = 3$$

Translate the graph of $y = 2\sqrt{x}$ right five units and up three units. The graph of $y = 2\sqrt{x}$ looks like the graph of $y = \sqrt{x}$ with a vertical stretch by a factor of 2.
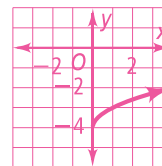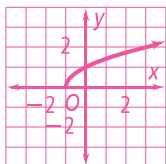
## Exercises
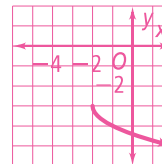
**Graph each function.**

**1.** $y = \sqrt{x - 4} + 1$
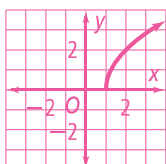
**2.** $y = \sqrt{x} - 4$
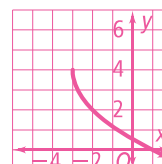
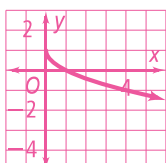**3.** $y = \sqrt{x + 1}$

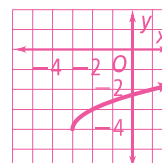**4.** $y = -\sqrt{x + 2} - 3$

**5.** $y = 2\sqrt{x - 1}$
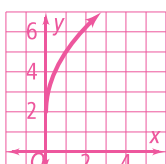
**6.** $y = -2\sqrt{x + 3} + 4$

**7.** $y = -\sqrt{x} + 1$

**8.** $y = \sqrt{x + 3} - 4$

**9.** $y = 3\sqrt{x} + 2$

**10.** $y = -\sqrt{x - 2}$

# 6-8 **Reteaching** (continued)

## Graphing Radical Functions

Graphs can be used to find solutions of equations containing radical expressions.

**Problem**

What is the minimum braking distance of a bicycle with a speed of 22 mph?

You can find the minimum braking distance $d$, in feet, of a bicycle travelling $s$ miles per hour using the equation $s = 5.5\sqrt{d + 0.002}$.

We want to find the value of $d$ when $s = 22$. In other words, solve the equation $5.5\sqrt{d + 0.002} = 22$. Graph $Y_1 = 5.5\sqrt{}(X+0.002)$ and $Y_2 = 22$. Try different values until you find an appropriate window. Then use the `intersect` feature to find the coordinates of the point of intersection.
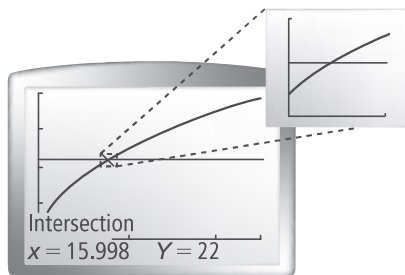


The minimum braking distance will be about 16 ft.

## Exercises

**Solve the equation by graphing. Round the answer to the nearest hundredth, if necessary. If there is no solution, explain why.**

**11.** $\sqrt{3x + 1} = 5$  **8**

**12.** $\sqrt{4x + 1} = 9$  **20**

**13.** $\sqrt{2 - 5x} = 4$  **−2.8**

**14.** $\sqrt{3x + 5} = 7$  **14.67**

**15.** $\sqrt{7x + 2} = 11$  **17**

**16.** $\sqrt{2x - 1} = \sqrt{1 - 2x}$  **0.5**

**17.** $\sqrt{x - 2} = \sqrt{2 - 3x}$  **no solution; $x = 1$ is extraneous**

**18.** $7\sqrt{x - 3} = 2\sqrt{2x + 1}$  **3.68**

**19.** $\sqrt{2x - 5} = \sqrt{4 - x}$  **3**

**20.** $\sqrt{2x + 7} = 3\sqrt{5x + 2}$  **−0.26**