NAME _____ DATE _____

# Practice 47

FOR USE WITH SECTION 8.1

**Match each function with one of the graphs below.**

**1.** $f(x) = \sqrt{x + 3} - 2$

**2.** $f(x) = -\sqrt{x - 2}$

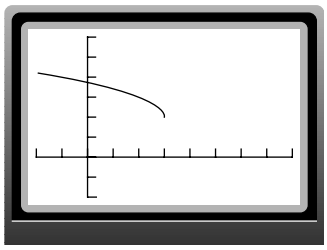
**3.** $f(x) = \sqrt{3 - x} + 2$

**4.** $f(x) = \sqrt{x} - 3$

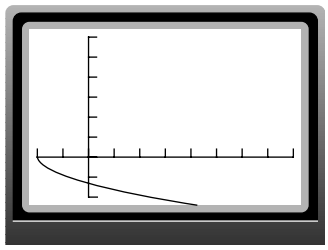
**5.** $f(x) = \sqrt{x - 3}$

**6.** $f(x) = -\sqrt{x + 2}$

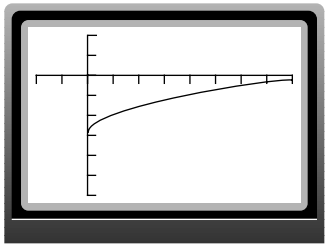
**A.**



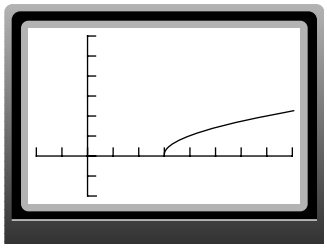
**B.**



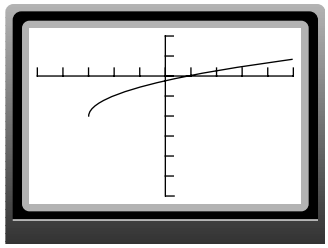
**C.**



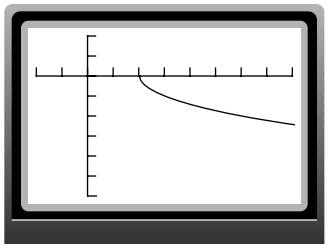
**D.**



**E.**



**F.**



**Graph each function. Also state the domain and range.**

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

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

**9.** $y = \sqrt{x} - 4$

**10.** $y = \sqrt{x + 4}$

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

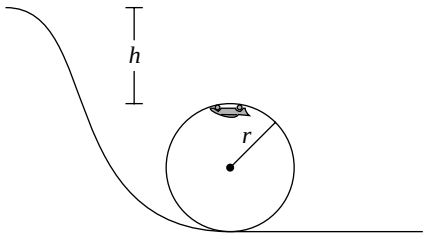
**12.** $y = -\sqrt{4 - x} + 2$

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

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

**15.** $y = -\sqrt{x - 4}$

**16.** The manufacturer of a toy race car track wants to create a circular loop, as shown. The cars will start a distance $h$ above the top of the loop, of radius $r$.




**a.** In order for a car to hug the track at the top of a loop, its weight must equal the force the car exerts against the track by virtue of its motion:

$$mg = m\frac{v^2}{r}.$$

Solve this equation for $v$.

**b.** The velocity $v$ of a car at the top of the loop is given by the equation $\frac{1}{2}mv^2 = mgh$, where $g$ is the acceleration due to gravity, which is 32 ft/s$^2$ on Earth. Use this equation and the equation in part (a) to express $h$ in terms of $r$.