

1. **Concept Check** In solving the equation

$\sqrt{3x+4} = 8-x$ , a student wrote the following for her first step:  
 $3x+4 = 64+x^2$ .

**WHAT WENT WRONG?** Solve the given equation correctly.

2. Solve each equation and check for **extraneous** solutions.

a)  $\sqrt{11x} - 20 = -9$

b)  $\sqrt{y-3} + 2 = 0$

c)  $\sqrt{x-1} = 3-x$

d)  $\sqrt[3]{3y+10} = -2$

e)  $2\sqrt{x+1} + 7 = x$

f)  $2\sqrt{x-3} = \sqrt{7x+15}$

g)  $\sqrt{2x+8} = -x$

h)  $\sqrt{a^2-11} = \sqrt{7-3a}$

3. **Concept Check** In solving the equation

$\sqrt{5x+6} - \sqrt{x+3} = 3$ , a student wrote the following for her first step:  
 $(5x+6) + (x+3) = 9$ .

**WHAT WENT WRONG?** Solve the given equation correctly.

4. Solve each equation and check for **extraneous** solutions.

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

b)  $\sqrt{4x-3} = 2 + \sqrt{2x-5}$

c)  $\sqrt{2y+3} - \sqrt{3y+7} = -1$

d)  $\sqrt{3x-5} + 1 + \sqrt{2x+3} = 0$

e)  $\sqrt{\sqrt{x^2-9}} = 2$

f)  $\sqrt{x+1} - \frac{2}{\sqrt{x+1}} = 1$

g)  $2\sqrt{y} + 2y^{-\frac{1}{2}} = 5$

h)  $(3x+1)^{\frac{1}{2}} + (2x+4)^{\frac{1}{2}} = 3$

5. Solve each formula for the indicated variable.

a)  $r = \sqrt{\frac{A}{\pi}}$  for  $A$

b)  $N = \frac{1}{2\pi} \sqrt{\frac{a}{r}}$  for  $r$

6. The function  $r = \left(\frac{S}{P}\right)^{\frac{1}{n}} - 1$  is used to find the average annual return for an investment.

a) Write  $S$  as a function of  $r$ ,  $P$ , and  $n$ .

b) Write  $P$  as a function of  $r$ ,  $S$ , and  $n$ .

7. After an accident, police determine the speed, in miles per hour, at which the car had been traveling by using the formula  $r = 2\sqrt{5L}$ , where  $L$  is the length of the skid mark of a car, in feet. Use this formula to find how far a car will skid at 60 mph and at 100 mph?

