

Name

# 9.4 Use Square Roots to

Alg I

# Solve Quadratic Equations

I can solve a quadratic equation by finding square roots.

## Solving $x^2 = d$

\* If  $d > 0$ , then there are 2 solutions

$$x = \pm \sqrt{d}$$

\* If  $d = 0$ , then the 1 solution is  $x = 0$

\* If  $d < 0$ , then there are no solutions

Ch. 9 Quiz

### Example 1:

$$1) \begin{array}{r} c^2 - 25 = 0 \\ +25 \quad +25 \end{array}$$

$$\sqrt{c^2} = \sqrt{25}$$
$$\boxed{c = \pm 5}$$

$$2) \begin{array}{r} 5w^2 + 12 = -8 \\ -12 \quad -12 \end{array}$$

$$\frac{5w^2}{5} = \frac{-20}{5}$$

$$w^2 = -4$$

$\boxed{\text{No Solution}}$

$$3) \begin{array}{r} 2x^2 + 11 = 11 \\ -11 \quad -11 \end{array}$$

$$\frac{2x^2}{2} = \frac{0}{2}$$

$$\sqrt{x^2} = \sqrt{0}$$

$\boxed{x = 0}$

### Example 2:

$$4) \begin{array}{r} 25x^2 = 16 \\ \frac{25}{25} \quad \frac{25}{25} \end{array}$$

$$\sqrt{x^2} = \sqrt{\frac{16}{25}}$$

$\boxed{x = \pm \frac{4}{5}}$

$$5) \begin{array}{r} 9m^2 = 100 \\ \frac{9}{9} \quad \frac{9}{9} \end{array}$$

$$\sqrt{m^2} = \sqrt{\frac{100}{9}}$$

$\boxed{m = \pm \frac{10}{3}}$

$$6) \begin{array}{r} 49b^2 + 64 = 0 \\ -64 \quad -64 \end{array}$$

$$\frac{49b^2}{49} = \frac{-64}{49}$$

$$b^2 = \frac{-64}{49}$$

$\boxed{\text{No Solution}}$

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## Example 3°

$$7) \quad x^2 + 4 = 14$$

$$\begin{array}{r} -4 \quad -4 \\ \hline \sqrt{x^2} = \sqrt{10} \end{array}$$

$$\sqrt{9} \quad \sqrt{16}$$

$$\frac{1}{3} \quad \frac{1}{4}$$

$$3.1^2 = 9.61$$

$$3.2^2 = 10.24$$

$$\boxed{x = \pm 3.15}$$

$$8) \quad 3k^2 - 1 = 0$$

$$\begin{array}{r} +1 \quad +1 \\ \hline 3k^2 = 1 \\ \frac{3k^2}{3} = \frac{1}{3} \end{array}$$

$$\sqrt{k^2} = \sqrt{\frac{1}{3}} \rightarrow \frac{\sqrt{1}}{\sqrt{3}} = \frac{1}{1.73} = \pm .58$$

$$\sqrt{1} \quad \sqrt{4}$$

$$1.7^2 = 2.89$$

$$\frac{1}{3}$$

$$1.8^2 = 3.24$$

Ch. 9 Quiz

\* Complete Skills

Practice, pg. 597,

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$$9) \quad 2p^2 - 7 = 2$$

$$\begin{array}{r} +7 \quad +7 \\ \hline 2p^2 = 9 \end{array}$$

$$\frac{2p^2}{2} = \frac{9}{2} \rightarrow \sqrt{p^2} = \sqrt{\frac{9}{2}} \rightarrow \frac{\sqrt{9}}{\sqrt{2}} = \frac{3}{1.4} = \pm 2.14$$

$$1.4^2 = 1.96$$

## Example 4°

$$10) \quad \frac{2(x-2)^2}{2} = \frac{18}{2}$$

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

$$x-2 = 3$$

$$\begin{array}{r} +2 \quad +2 \\ \hline \end{array}$$

$$\boxed{x = 5}$$

$$x-2 = -3$$

$$\begin{array}{r} +2 \quad +2 \\ \hline \end{array}$$

$$\boxed{x = -1}$$

$$11) \quad \frac{4(q-3)^2}{4} = \frac{28}{4}$$

$$\sqrt{(q-3)^2} = \sqrt{7}$$

$$q-3 = 2.65$$

$$\begin{array}{r} +3 \quad +3 \\ \hline \end{array}$$

$$\boxed{q = 5.65}$$

$$q-3 = -2.65$$

$$\begin{array}{r} +3 \quad +3 \\ \hline \end{array}$$

$$\boxed{q = .35}$$

$$\begin{array}{r} \sqrt{7} \approx 2.65 \\ \sqrt{4} \quad \sqrt{9} \\ \frac{1}{2} \quad \frac{1}{3} \end{array}$$