

## Solving Quadratic Equations by Square Roots

### Solution of a Quadratic

**The solution of a quadratic function is its:**

- Zeros
- Roots
- x-intercepts

$$X = \{ \quad , \quad \}$$

**NOTE:** Solving a quadratic equation means finding its zeros!

## Solving Quadratics by taking Square Roots

1. Get  $x^2$  or the binomial squared on one side of the equation by itself
2. Take the square root of BOTH sides of the equal sign
3. Don't forget the  $\pm$  sign
4. Simplify if necessary

## Solving Quadratic using Square Roots

Solve each equation by taking square roots.

$$1) \sqrt{p^2} = \sqrt{25}$$

$$p = \pm 5$$

$$p = \{-5, 5\}$$

$$2) \sqrt{x^2} = \sqrt{18}$$

$$x = \pm 3\sqrt{2}$$

$$x = \{-3\sqrt{2}, 3\sqrt{2}\}$$

$$\begin{array}{l} \sqrt{18} \\ \sqrt{9\sqrt{2}} \\ 3\sqrt{2} \end{array}$$

## Solving Quadratic using Square Roots

Solve each equation by taking square roots.

$$3) p^2 - 3 = 5$$

$$\begin{array}{c} +3 \quad +3 \\ \hline \sqrt{p^2} = \sqrt{8} \end{array}$$

$$p = \pm 2\sqrt{2}$$

$$p = \{-2\sqrt{2}, 2\sqrt{2}\}$$

$$4) 5x^2 + 1 = 46$$

$$\begin{array}{c} -1 \quad -1 \\ \hline \frac{5x^2}{5} = \frac{45}{5} \end{array}$$

$$\sqrt{x^2} = \sqrt{9}$$

$$x = \pm 3$$

$$x = \{-3, 3\}$$

## Solving Quadratic using Square Roots

Solve each equation by taking square roots.

$$5) \sqrt{(x+1)^2} = \sqrt{25}$$

$$\begin{array}{c} x+1 = \pm 5 \\ -1 \quad -1 \end{array}$$

$$x = -1 \pm 5$$

$$\begin{array}{l} x = -1 + 5 \\ x = 4 \end{array}$$

$$\begin{array}{l} x = -1 - 5 \\ x = -6 \end{array}$$

$$6) (x-2)^2 + 2 = 9$$

$$\begin{array}{c} -2 \quad -2 \\ \hline \sqrt{(x-2)^2} = \sqrt{7} \end{array}$$

$$\begin{array}{c} x-2 = \pm \sqrt{7} \\ +2 \quad +2 \end{array}$$

$$x = 2 \pm \sqrt{7}$$

$$x = 2 + \sqrt{7}$$

$$x = 2 - \sqrt{7}$$