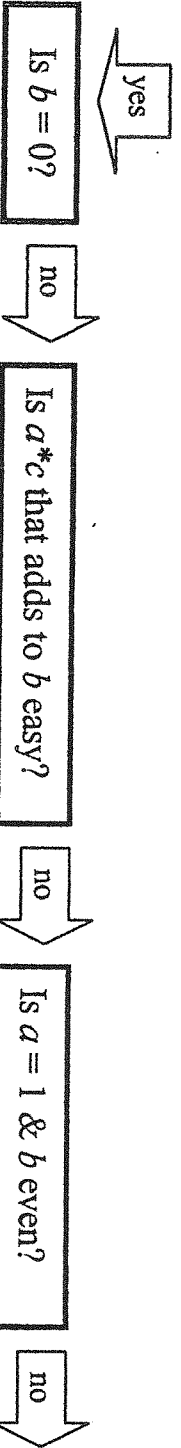


# How to Solve Quadratic Equations

Get the equation in standard form,  $ax^2 + bx + c = 0$

Factor out any Greatest Common Factors



Get  $x^2$  alone  
 $\sqrt{\quad}$  both sides

$$3x^2 - 15 = 0$$

$$\frac{3(x^2 - 5) = 0}{3}$$

$$x^2 - 5 = 0$$

$$\sqrt{x^2} = \sqrt{5}$$

$$x = \pm\sqrt{5}$$

$$2(x-1)^2 = 32$$

$$\frac{2(x-1)^2 = 32}{2}$$

$$(x-1)^2 = 16$$

$$\sqrt{x-1} = \pm 4$$

$$x = 1 \pm 4 \quad \boxed{5 \text{ or } -3}$$

Solve by Factoring

$$x^2 - x - 56 = 0$$

$$(x-8)(x+7) = 0$$

$$\sqrt{x-8} = 0 \text{ or } -7$$

$$5x^2 + 11x + 2 = 0$$

$$\frac{5x^2 + 10x + x + 2 = 0}{5x(x+2) + 1(x+2) = 0}$$

$$(x+2)(5x+1) = 0$$

$$x = -2 \text{ or } -\frac{1}{5}$$

$$\boxed{x = -2 \text{ or } -\frac{1}{5}}$$

Solve by:  
Completing the Square

$$x^2 - 4x - 2 = 0$$

$$\frac{x^2 - 4x + 2 = 2 + 2}{x^2 - 4x + 4 = 2 + 4}$$

$$x^2 - 4x + 4 = 2 + 4$$

$$(x-2)(x-2) = 6$$

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

$$\sqrt{x-2} = \pm\sqrt{6}$$

$$x-2 = \pm\sqrt{6}$$

$$\boxed{x = 2 \pm \sqrt{6}}$$

Solve by:  
Quadratic Formula  
 $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$4x^2 + 10x + 2 = 0$$

$$\frac{4x^2 + 10x + 2 = 0}{2(2x^2 + 5x + 1) = 0}$$

$$\frac{2x^2 + 5x + 1 = 0}{a=2, b=5, c=1}$$

$$-5 \pm \sqrt{25 - 4 \cdot 2 \cdot 1}$$

$$\frac{-5 \pm \sqrt{17}}{2 \cdot 2}$$

$$\boxed{\frac{-5 \pm \sqrt{17}}{4}}$$

Key	
Items	