

$$\begin{array}{r} -4 \\ -4 \\ -3 \end{array}$$

Warm-up

Solve the equation $2x^2 - 3x - 2 = 0$.

$$\begin{array}{l} (2x^2 - 4x) + (x - 2) \\ 2x(x - 2) + 1(x - 2) \\ (2x + 1)(x - 2) = 0 \\ 2x + 1 = 0 \quad x - 2 = 0 \\ x = -\frac{1}{2} \quad x = 2 \end{array} \quad \left\{ \begin{array}{l} 2x^2 - 3x - 2 = 0 \\ (x - \frac{4}{2})(x + \frac{1}{2}) \\ (x - 2)(2x + 1) = 0 \end{array} \right.$$

Precalculus

Chapter P.5

Solving Equations Graphically, Numerically, and Algebraically

HW: #1-9 on P5 and P7 Review Worksheet

Solving by Factoring

Solve the equation $9x^2 - 5x = 0$.

$$\begin{array}{l} x(9x - 5) = 0 \\ x = 0 \quad 9x - 5 = 0 \\ \frac{9x}{9} = \frac{5}{9} \\ x = \frac{5}{9} \end{array} \quad \left\{ \begin{array}{l} x = 0 \text{ or } x = \frac{5}{9} \\ x = \frac{5}{9} \end{array} \right.$$

Solving By Square Roots

Solve $(2x - 1)^2 = 9$.

$$\begin{array}{l} \sqrt{(2x - 1)^2} = \sqrt{9} \\ 2x - 1 = \pm 3 \\ \frac{2x}{2} = \frac{\pm 3 + 1}{2} \\ x = \frac{\pm 3 + 1}{2} \end{array} \quad \left\{ \begin{array}{l} (3x + 2)^2 = 16 \\ 3x + 2 = \pm 4 \\ 3x = \pm 4 - 2 \\ x = \frac{\pm 4 - 2}{3} \\ x = \frac{4 - 2}{3} = \frac{2}{3} \\ x = \frac{-4 - 2}{3} = -2 \end{array} \right.$$

$$\begin{array}{l} x = \frac{+3 + 1}{2} = 2 \\ x = \frac{-3 + 1}{2} = -1 \\ x = 2 \text{ or } x = -1 \end{array}$$

~~$(x-b)(x+a)=0$~~
 ~~$\frac{1}{2}$~~
 ~~$\frac{6}{-4}$~~ $\frac{1}{2} = (\)^2$

Solve by Completing the Square

Solve $x^2 - 4x - 12 = 0$.

$+12 +12$

$$x^2 - 4x + \frac{4}{12} = 12 + \frac{4}{12}$$

$\sqrt{(x-2)^2} = \sqrt{16}$

~~$\frac{4}{4}$~~ $x+2 = \pm 4$

$+2 +2$

$x = \pm 4 + 2$

$x = 6 \text{ or } x = -2$

~~$\frac{4}{6}$~~

Solve by Completing the Square

Solve $4x^2 - 24x - 16 = 0$.

$\frac{4}{4} \frac{4}{4} \frac{4}{4} \frac{4}{4}$

$$x^2 - 6x - 4 = 0$$

$+4 +4$

$$x^2 - 6x + \frac{9}{4} = 4 + \frac{9}{4}$$

$\sqrt{(x-3)^2} = \sqrt{13}$

$x-3 = \pm \sqrt{13}$

$+3 +3$

$x = 3 \pm \sqrt{13}$

$x = 3 + \sqrt{13}$
or
 $x = 3 - \sqrt{13}$

Solving Using the Quadratic Formula

Solve the equation $3x^2 - 6x = 5$.

$\frac{\sqrt{6}\sqrt{6}}{4\sqrt{6}}$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$3x^2 - 6x - 5 = 0$

$a = 3$
 $b = -6$
 $c = -5$

$$x = \frac{6 \pm \sqrt{(-6)^2 - 4(3)(-5)}}{2(3)}$$

$$x = \frac{6 \pm \sqrt{36 + 60}}{6}$$

$$x = \frac{6 \pm \sqrt{96}}{6}$$

$x = \frac{6 \pm 4\sqrt{6}}{6} = \frac{3 \pm 2\sqrt{6}}{3}$