

The Quadratic Formula

Example 3: use the quadratic Formula to solve the equation. round to the nearest hundredth, if necessary.

$$-1 = 3n^2 - 5n$$

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

What is the Quadratic Formula?

The Quadratic Formula is

remember! The equation MUST be written in standard form:

$$ax^2 + bx + c = 0$$

Example 4: use the quadratic formula to solve the equation. round to the nearest hundredth, if necessary.

$$5w^2 + 4 = w + 6$$

Examples 3 & 4

Example 1: use the quadratic formula to solve the equation. round to the nearest hundredth, if necessary.

$$2x^2 + 7x - 9 = 0$$

Example 2: use the quadratic formula to solve the equation. round to the nearest hundredth, if necessary.

$$4m^2 = 7m + 2$$

Examples 1 & 2

The QUADRATIC f★RMULA

Example 3: use the QUADRATIC FORMULA to solve the equation. round to the nearest hundredth, if necessary.

$$-1 = 3n^2 - 5n$$

$$\begin{array}{ccc} +1 & & +1 \\ 0 = 3n^2 - 5n + 1 \end{array}$$

$$a = 3 \quad b = -5 \quad c = 1$$

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

$$x = \frac{5 \pm \sqrt{(-5)^2 - 4(3)(1)}}{2(3)}$$

$$x = \frac{5 \pm \sqrt{25 - 12}}{6}$$

$$x = \frac{5 \pm \sqrt{13}}{6}$$

$$x = \frac{5 \pm 3.606}{6}$$

$$x = \frac{5+3.606}{6} \approx 1.43$$

$$x = \frac{5-3.606}{6} \approx 0.23$$

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

What is the QUADRATIC f★RMULA?

The Quadratic Formula is

another method for solving a quadratic equation.

(other methods: factoring, graphing, finding square roots)

remember! The equation MUST be written in standard form:

$$\textcircled{a}x^2 + \textcircled{b}x + \textcircled{c} = 0$$

Example 4: use the quadratic formula to solve the equation. round to the nearest hundredth, if necessary.

$$\begin{array}{ccccccc} 5W^2 & + & 4 & = & W & + & 6 \\ & & -W & & -6 & & \\ & & -W & & -6 & & \\ 5W^2 - W - 2 & = & 0 \end{array}$$

$$\begin{aligned} x &= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \\ x &= \frac{1 \pm \sqrt{(-1)^2 - 4(5)(-2)}}{2(5)} \\ x &= \frac{1 \pm \sqrt{1 + 40}}{10} \\ x &= \frac{1 \pm \sqrt{41}}{10} \\ x &= \frac{1 \pm 6.403}{10} \end{aligned}$$

$$\begin{aligned} x &= \frac{1 + 6.403}{10} \approx 0.74 \\ x &= \frac{1 - 6.403}{10} \approx -0.54 \end{aligned}$$

Examples 3 & 4

Example 1: use the quadratic formula to solve the equation. round to the nearest hundredth, if necessary.

$$2x^2 + 7x - 9 = 0$$

$a = 2 \quad b = 7 \quad c = -9$

$$\begin{aligned} x &= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \\ x &= \frac{-7 \pm \sqrt{(7)^2 - 4(2)(-9)}}{2(2)} \\ x &= \frac{-7 \pm \sqrt{49 + 72}}{4} \\ x &= \frac{-7 \pm \sqrt{121}}{4} \\ x &= \frac{-7 \pm 11}{4} \end{aligned}$$

$$\begin{aligned} x &= \frac{-7 + 11}{4} = 1 \\ x &= \frac{-7 - 11}{4} = \frac{-18}{4} = -4.5 \end{aligned}$$

Example 2: use the quadratic formula to solve the equation. round to the nearest hundredth, if necessary.

$$\begin{array}{ccccccc} 4m^2 & = & 7m & + & 2 \\ & & -7m & & -2 & & \\ & & -7m & & -2 & & \\ 4m^2 - 7m - 2 & = & 0 \end{array}$$

$$\begin{aligned} x &= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \\ x &= \frac{7 \pm \sqrt{(-7)^2 - 4(4)(-2)}}{2(4)} \\ x &= \frac{7 \pm \sqrt{49 + 32}}{8} \\ x &= \frac{7 \pm \sqrt{81}}{8} \\ x &= \frac{7 \pm 9}{8} \end{aligned}$$

$$\begin{aligned} x &= \frac{7 + 9}{8} = 2 \\ x &= \frac{7 - 9}{8} = \frac{-2}{8} = -0.25 \end{aligned}$$

Examples 1 & 2

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directions:

Step 1: Print pages 1 & 2 front to back so that the text is facing in opposite directions.

Step 2: Cut the paper in half (along the dotted line)

Step 3: Place the half that says "Examples 3 & 4" face up on the desk. Take the other sheet and line up the side that says "Examples 1 & 2" face up just above the other sheet.

Step 4: Fold over the top half of both sheets. Secure with a few staples.

The final product should look like this:

