

5.6 Quadratic Formula

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

To use the quadratic formula:

1. Equation must be in the form $ax^2 + bx + c = 0$.
2. Plug the values of a , b , and c into the formula.
3. Simplify the radical.
4. Simplify the answer.



$$a=2 \quad b=-3 \quad c=-2$$

Solve using the quadratic formula: $2x^2 - 3x - 2 = 0$

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

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

$$x = \frac{3 \pm \sqrt{25}}{4} = \frac{3 \pm 5}{4}$$



$$\frac{3+5}{4}$$

$$\boxed{x=2}$$

$$\frac{3-5}{4}$$

$$\boxed{x = -\frac{1}{2}}$$

$$a = -1 \quad b = 2 \quad c = -2$$

Solve using the quadratic formula: $-x^2 + 2x = 2$

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

$$\begin{array}{r} -2 \quad -2 \\ \hline -x^2 + 2x - 2 = 0 \end{array}$$

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

$$x = \frac{-2 \pm \sqrt{-4}}{-2} = \frac{-2 \pm 2i}{-2}$$



$$x = \frac{1 \pm 1i}{1}$$

$$x = 1 \pm 1i$$

$$a = -2 \quad b = -1 \quad c = 5$$

Solve using the quadratic formula: $-2x^2 + 5 = x$

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

$$\begin{array}{r} -x \quad -x \\ \hline -2x^2 - x + 5 = 0 \end{array}$$

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

$$x = \frac{1 \pm \sqrt{41}}{-4}$$

