

Steps to Solve a Quadratic Equation using the Quadratic Formula Method

1. Write out original problem.
2. Set up equation in general form of:
 $ax^2 + bx + c = 0$. Use zeros as placeholders if needed.
3. Write down the quadratic formula,
4. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
5. Set up Let statements for Let a = __, Let b = __, and Let c = __.
6. Substitute using () for each of variables a, b and c.
7. Simplify fraction and simplify $\sqrt{\quad}$.
8. Once the fraction is simplified and a $\sqrt{\quad}$ remains in the fraction, check the numbers outside of the $\sqrt{\quad}$ to see if there is a common factor. If there is a common factor, split up fraction at the \pm and then simplify each fraction. Put the fractions back together.
9. If a $\sqrt{\quad}$ does not remain in the fraction, split up fraction into two fractions by splitting at the \pm sign and then simplify each fraction.

Example: Solve $3x^2 + 2x - 6 = 0$, using the quadratic formula.

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

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}; a = 3, b = 2, c = -6$$

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

$$x = \frac{-2 \pm \sqrt{4 + 72}}{6}$$

$$x = \frac{-2 \pm \sqrt{76}}{6}$$

$$x = \frac{-2 \pm \sqrt{4}\sqrt{19}}{6}$$

$$x = \frac{-2 \pm 2\sqrt{19}}{6}$$

$$x = \frac{-2}{6} \pm \frac{2\sqrt{19}}{6}$$

$$x = \frac{-1}{3} \pm \frac{1\sqrt{19}}{3}$$

$$x = \frac{-1 \pm \sqrt{19}}{3}$$