Steps to Solve a Quadratic Equation using the Quadratic Formula Method

1. Write out original problem.
2. Set up equation in the general form of, $ax^2 + bx + c = 0$. Note: Use zeros as placeholders if needed.
3. Write down the quadratic formula and write down the values for ***a***, ***b***, and ***c***.

   $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$; ***a*** = …, ***b*** = …, ***c*** = …,
4. Substitute using ( ) for each of variables ***a***, ***b*** and ***c***.
5. Simplify fraction and simplify $\sqrt{\ }$. Note: You may simplify the $\sqrt{\ }$ off to the side and not in the fraction.
6. Once the entire right side is simplified, break up equation into two equations at the $\pm$.
7. Simplify each equation.

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

$$3x^2 + 2x - 6 = 0$$
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}; a = 3, b = 2, c = -6$$
$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(3)(-6)}}{2(3)}$$
$$x = \frac{-2 \pm \sqrt{4 + 72}}{6}$$
$$x = \frac{-2 \pm \sqrt{76}}{6}$$
$$x = \frac{-2 \pm \sqrt{4}\sqrt{19}}{6}$$
$$x = \frac{-2 \pm 2\sqrt{19}}{6}$$
$$x = \frac{-2}{6} + \frac{2\sqrt{19}}{6} \ \ or \ \ x = \frac{-2}{6} - \frac{2\sqrt{19}}{6}$$
$$x = \frac{-1}{3} + \frac{1\sqrt{19}}{3} \ \ or \ x = \frac{-1}{3} - \frac{1\sqrt{19}}{3}$$
$$x = -\frac{1}{3} + \frac{\sqrt{19}}{3} \ \ or \ x = -\frac{1}{3} - \frac{\sqrt{19}}{3}$$