The following equation is called the **Quadratic Formula**.

It is read “x equals the opposite of b, plus or minus the square root of the quantity b squared minus 4ac, all divided by 2a.”

To use the quadratic formula to solve an equation, you will substitute the values of \(a\), \(b\), and \(c\) into the quadratic formula.

(Remember: the equation **must** first be written in standard form!) If a term is missing, fill in the missing term with "0" as its coefficient.

Now you are ready to find the solutions to a quadratic equation using the **Quadratic Formula**!

**Example:** Find the solutions for "x" in the equation \(3x^2 = 2x + 1\).

- First, put the equation in standard form. 
  \[3x^2 - 2x - 1 = 0\]
- Second, state the values of \(a\), \(b\), and \(c\). 
  \(a = 3, b = -2, c = -1\)
- Then, substitute the values of \(a\), \(b\), and \(c\) into the formula:

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

\[
\begin{align*}
  b &= -2 \\
  a &= 3 \\
  c &= -1
\end{align*}
\]

And simplify………. 

\[
x = \frac{2 \pm \sqrt{4 - (-12)}}{6}
\]

\[
x = \frac{2 \pm \sqrt{16}}{6}
\]

\[
x = \frac{2 \pm 4}{6}
\]

\[
x = \frac{2 + 4}{6} = \frac{6}{6} = 1
\]

\[
x = \frac{2 - 4}{6} = \frac{-2}{6} = \frac{-1}{3}
\]
Solve using the Quadratic Formula.

9. \( x^2 - 6x + 1 = 0 \)
10. \( 2x^2 - 15 = -7x \)

11. \( x^2 + 5x = -6 \)
12. \( 2x^2 = 0 \)