Quadratics – Day 6                                      Name _____
Notes                                                   Date _____ Per. _____

**The following equation is called the <u>Quadratic Formula</u>.**

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."

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

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 <u>Quadratic Formula</u>!
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:

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

| b = -2 | a = 3 | c = -1 |

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.      $2x^2 = 0$