

# NOTES: QUADRATIC FORMULA

DAY 14

Textbook Chapter 4.8

**OBJECTIVE:** Today you will learn about the quadratic formula and discriminant!

**The Quadratic Formula:**  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  ( $a, b, c$  are real #'s) ( $a \neq 0$ )

The Quadratic Formula can be used any time you are asked to find the **Roots, Zeros, or Solutions** of a quadratic equation.

## I. Quadratic Equations with \_\_\_\_\_ Solutions

- 1) Put into standard form:  $Ax^2 + Bx + C = 0$
- 2) Identify  $a, b,$  and  $c.$
- 3) Plug  $a, b$  and  $c$  into the quadratic formula. Solve for  $x.$  Reduce your square roots!

Use the Quadratic Formula to solve the Quadratic Equation!

$2x^2 + x - 5 = 0$        $A = \underline{\hspace{1cm}}$        $B = \underline{\hspace{1cm}}$        $C = \underline{\hspace{1cm}}$

## II. Quadratic Equations with \_\_\_\_\_ Solutions

Use the Quadratic Formula to solve the Quadratic Equation!

$x^2 - 6x + 9 = 0$        $A = \underline{\hspace{1cm}}$        $B = \underline{\hspace{1cm}}$        $C = \underline{\hspace{1cm}}$

### III. Quadratic Equations with \_\_\_\_\_ Solutions

Use the Quadratic Formula to solve the Quadratic Equation!
$-x^2 + 2x - 2 = 0$ $A = \underline{\hspace{2cm}} \quad B = \underline{\hspace{2cm}} \quad C = \underline{\hspace{2cm}}$

...is used to determine the equation's **number** and **type of solutions**.

**The Discriminant**  
 $b^2 - 4ac$

	$-x^2 + 2x = 2$	$x^2 - 2x = 4x - 9$	$2x^2 + 3x = 2x + 5$
Put in Standard Form			
Find the Discriminant			
Number and type of solutions	Pos Neg Zero	Pos Neg Zero	Pos Neg Zero
Sketch of graph			

# PRACTICE: QUADRATIC FORMULA

DAY 14

1.  $x^2 + 4x + 2 = 0$

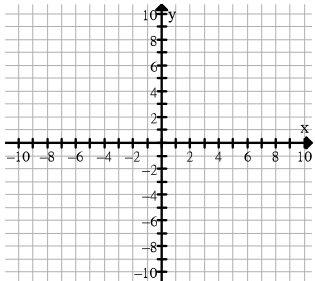
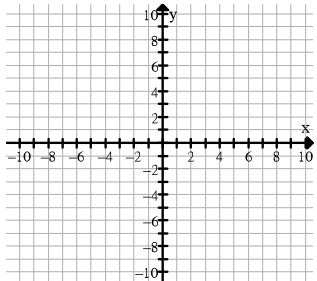
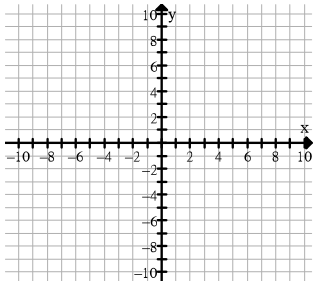
2.  $3x^2 + x - 3 = 0$

3.  $x^2 - x - 20 = 0$

4.  $-x^2 + 3x = 5$

# SOLVING QUADRATIC EQUATIONS: STANDARD FORM

Solving a quadratic function means to find the...

Quadratic Function (standard form)	$y = x^2 - x - 6$	$y = x^2 - 9$	$y = -x^2 + 3x + 6$
<b>SOLVE: Find the Solutions</b>			
<b>Solve by Graphing on Calculator!</b>  (use separate instructions)	Vertex: (        ,        )  Zeros: <div style="text-align: center; margin-top: 20px;">  </div>	Vertex: (        ,        )  Zeros: <div style="text-align: center; margin-top: 20px;">  </div>	Vertex: (        ,        )  Zeros: <div style="text-align: center; margin-top: 20px;">  </div>