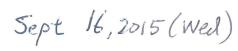
## Analytic Geometry Quadratic Formula and Discriminant



\* A <u>quadratic equation</u> is as an equation of degree 2, meaning that the highest exponent of this function is 2.

\* The quadratic formula is used to solve an equation of the form  $ax^2 + bx + c = 0$ 

\*This formula can solve any equation that can be solved by factoring and completing the square

Quadratic Formula: 
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$
 given  $ax^2 + bx + c = 0$ 

Solve for x below using quadratic formula

1. 
$$x^2 - 5x + 6 = 0$$

2. 
$$x^2 + 24x = 4$$

3. 
$$2x^2 + 10 = x$$

4. 
$$2x^2 - 9 = 0$$

The Discriminant is number (from the expression) inside the square root of the quadratic formula.

Since the quadratic formula is  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ , the discriminant is the  $b^2 - 4ac$ 

The discriminant describes the nature, or the type, of solutions

If the Discriminant is positive, there are 2 real answers (2 real roots)

If the Discriminant is negative, there are 2 imaginary answers (2 imaginary roots)

If the Discriminant is zero, there is 1 real answer. (2 real answers being the same value) (1 real root)

Find the discriminant for the below and describe the type of roots for each equation:

$$5. x^2 - 5x + 6 = 0$$

$$6. x^2 + 24x - 4 = 0$$

5. 
$$x^2 - 5x + 6 = 0$$
 6.  $x^2 + 24x - 4 = 0$  7.  $2x^2 - x + 10 = 0$ 

8. 
$$2x^2 - 9 = 0$$

a) Solve equation using quadratic formula b) find discriminant c) describe the nature of the roots

9. 
$$2x^2 - 3x - 5 = 0$$

10. 
$$x^2 + 12x = 3$$

11. 
$$2x^2 + 9 = 3x$$

12. 
$$2x^2 - 7 = 0$$

## Quadratic Formula and Discriminant Day 1 Homework

a) Solve equation using quadratic formula b) find discriminant c) describe the nature of the roots

 $4x^2 - 11x = 3$ 

2.  $x^2 + 7x = 5$ 

3.  $5x^2 + 1 = 3x$ 

4.  $5x^2 - 9 = 0$ 

- a) Solve equation using quadratic formula b) find discriminant c) describe the nature of the roots
- 5.  $-7 + 3x^2 = 4x$

6.  $x^2 + 11x = -4$ 

7	2~2	,	12	 52
/	/ X		1.)	 -DX

$$8. \ 3x^2 - 17 = 0$$