College Prep Math
Solving Quadratic Functions Notes

Today I will…	**I'll know I've got it when…**	**Essential Question…**

Quadratic Equations $ax^2 + bx + c = 0$

Methods of Solving:

1. Square root method (solve by inspection)
2. Factoring
3. Completing the square
4. Quadratic formula

Solutions (zeros, roots):

1. Two real solution
2. One real solution
3. Two imaginary solutions

Example 1: Solve by square root

1. Isolate the variable
2. Take the square root of both sides – don't forget $\pm$!

A. $x^2 - 8 = 17$ B. $(x-3)^2 = 8$ C. $3(x+1)^2 = 48$

Example 2: Solve by factoring

1. Set the trinomial equal to zero
2. Factor and use the zero product property
3. Solve each resulting equation

A. $x^2 - 7x = -10$ B. $(x+1)^2 = 4$ C. $2x^2 + 5x = 3$

Example 3: Solve by completing the square

1. Make sure a = 1. Then, isolate the constant on one side of the equation
2. Find $\left(\frac{b}{2}\right)^2$ and add it to BOTH sides of the equation.
3. Factor, square root and solve. Don't forget $\pm$!

A. $x^2+10x-4=0$

B. $2x^2+5x-3=0$

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

Discriminant: b^2-4ac

1. If D = 0, there is one real solution
2. If D > 0, there are two real solutions
3. If D < 0, there are no real solutions (2 imaginary)

Example 4: Solve using the quadratic formula

1. Put the equation in standard form.
2. Find a, b and c and substitute them into the formula.
3. Simplify

A. $2x^2-7x-5=0$

B. $6x^2=6x+1$