Completing the Square Notes

I. Recognizing Perfect Squares

Let's recall all the perfect squares you can think of!

Ex: 4, 9, 16, _____, _____, _____, _____, _____, and the list can go on and on!

Numbers are not the only perfect squares! Expressions can also be written as perfect squares! Try and factor each expression below and rewrite it as a perfect square!

EX1: $x^2 + 14x + 49$

EX2: $x^2 - 10x + 25$

What happens if the expression isn't already a perfect square? For this situation, we will use a process called completing the square to make it perfect! :)

II. Process of Completing the Square

Steps for Completing the Square:

Step 1: Write in form $x^2 + bx = c$

Step 2: Find $\left(\frac{b}{2}\right)^2$ and add it to both sides of the equation!

Step 3: Factor the left side, which it should be a perfect square trinomial! OR use the TRICK: It will always factor on the inside to be $\left(\frac{b}{2}\right)$ "BEFORE YOU SQUARED IT!)

Step 4: You are now left with an equation of the form $(x \pm \#)^2 = \#$

** Leaving your answer just like this is the process of completing the square!

EX4: Rewrite the following $x^2 + 6x - 12 = 0$ as a perfect square.

EX5: Rewrite the following $x^2 + 4x - 12 = 0$ as a perfect square.

EX6: Rewrite the following $x^2 - 8x - 28 = 0$ as a perfect square.

EX7: Rewrite the following $x^2 + 2x + 3 = 0$ as a perfect square.

EX8:Rewrite the following $x^2 + 6x + 22 = 0$ as a perfect square.