

#4 ~ Sect. 5.7: Completing the Square (Part 1)

Let's review Factoring
Perfect Square Trinomials:

Factor:

$$x^2 - 14x + 49 =$$

$$a^2 + 2ab + b^2 = (a + b)^2$$

$$a^2 - 2ab + b^2 = (a - b)^2$$

Completing the Square:

$$x^2 + bx + \left(\frac{b}{2}\right)^2 = \left(x + \frac{b}{2}\right)^2$$

Ex. 1: Find the missing value to complete the square.

$$x^2 + 20x + \underline{\hspace{2cm}}$$

To solve an equation by completing the square, you follow these steps:

1. Check to see if the equation is a Perfect Square Trinomial...if it is, skip to step #4.
2. Rewrite the equation so that only the terms containing x are on one side.
3. Complete the square.
4. Factor the Perfect Square Trinomial.
5. Square Root both sides.
6. Solve for x.

Ex. 2: Solve the equation.

$$x^2 - 12x + 36 = 9$$

Ex. 3: Solve by completing the square.

$$a) x^2 + 4x + 1 = 0$$

$$b) x^2 + 4x - 4 = 0$$