

Completing the square method allows us to factor an expression that is initially unfactorable

Steps for Completing the square:

- 1) Rearrange equation in standard form: $ax^2 + bx + c = 0$
- 2) divide each term in the equation by a if $a \neq 1$ (We need the new a value to be 1)
- 3) Move the constant to the other side of the equation.
- 4) Add spaces "+ ___" to the equation: $x^2 + bx + \underline{\hspace{1cm}} = c + \underline{\hspace{1cm}}$
- 5) Find $\left(\frac{b}{2}\right)^2$ and enter this value into the blank spaces ___ on both sides of the equation
- 6) Rewrite left side in factored form and add the numbers on the right side
- 7) take the $\sqrt{\hspace{1cm}}$ of both sides (don't forget \pm)
- 8) solve for x

I. Getting ready:

Find $\left(\frac{b}{2}\right)^2$ and factor the expression

1. $x^2 + 4x + \underline{\hspace{1cm}}$

2. $x^2 - 10x + \underline{\hspace{1cm}}$

3. $x^2 + 8x + \underline{\hspace{1cm}}$

Examples: Solve by completing the square method:

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

2. $x^2 + 12x - 1 = 0$

Steps for Completing the square:

- 1) Rearrange equation in standard form: $ax^2 + bx + c = 0$
- 2) divide each term in the equation by a if $a \neq 1$ (We need the new a value to be 1)
- 3) Move the constant to the other side of the equation.
- 4) Add spaces ___ to the equation: $x^2 + bx + __ = c + ____$
- 5) Find $\left(\frac{b}{2}\right)^2$ and enter this value into the blank spaces ___ on both sides of the equation
- 6) Rewrite left side in factored form and add the numbers on the right side
- 7) take the $\sqrt{\quad}$ of both sides (don't forget \pm)
- 8) solve for x

Solve for x below using completing the square method:

3. $x^2 - 4x - 15 = 0$

4. $2x^2 + 32x - 8 = 0$

5. $5x^2 - 20x - 30 = 0$

6. $2x^2 + 16x = 6$

Completing the Square WS #1 Homework

September 14, 2015 (Mon)

Solve for x below using completing the square method:

1. $3x^2 - 12x - 18 = 0$

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

3. $3x^2 - 12x - 15 = 0$

4. $x^2 + 14x - 100 = 0$

$$5. 3x^2 - 24x - 3 = 0$$

$$6. 5x^2 - 20 + 60x = 0$$

$$7. -16 + 2x^2 + 4x = 0$$

$$8. 4x^2 + 64x - 12 = 0$$