

Name: _____ Hour: _____ Date: _____

NOTES: Section 4.7 – Complete the Square

Goals: #1 - I can solve quadratics by completing the square.

#2 - I can change a quadratic from standard form to vertex form.



Homework: Lesson 4.7 Worksheet

Warm Up:

1. Solve $3x^2 + 8 = -76$

Write the expression as a complex number in standard form.

2. $(5 - 8i) - (-9 + 3i)$

3. $\frac{5 - 8i}{-9 + 3i}$

4. $-2 + 55i^{66}$

5. $-10 + 2i^{45}$

Exploration #1: Work with a partner.

1. Write some examples of a *perfect square trinomial*.

2. What value of c would make the following a perfect square trinomial?

$$x^2 + 14x + c$$

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Example #1: Solve the quadratic equation by finding square roots.

1. $x^2 - 8x + 16 = 25$

2. $x^2 - 10x + 25 = 1$

You practice: Solve the quadratic equation by finding square roots.

3. $x^2 + 6x + 9 = 36$

4. $x^2 - 24x + 144 = 100$

Example #2: Find the value of c that makes the expression a perfect square trinomial. Then write the expression as the square of a binomial.

1. $x^2 + 16x + c$

2. $x^2 + 14x + c$

You practice: Find the value of c that makes the expression a perfect square trinomial. Then write the expression as the square of a binomial.

3. $x^2 + 22x + c$

4. $x^2 - 9x + c$

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Notes:

We can use this idea to make _____ quadratic expression a _____.

This process is called _____.

To complete the square for the expression $x^2 + bx$, add _____.

Example #3: Solve the equation by completing the square.

1. $x^2 - 12x + 4 = 0$

2. $2x^2 + 8x + 14 = 0$

You practice: Solve the equation by completing the square.

3. $x^2 - 10x + 8 = 0$

4. $3x^2 + 12x - 18 = 0$

Notes:

Recall the vertex form of a quadratic function is _____.

We use _____ to write any quadratic function in vertex form.

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Example #4: Write the quadratic function in vertex form. Then identify the vertex.

1. $y = x^2 - 10x + 22$

2. $y = x^2 - 8x + 17$

You practice: Write the quadratic function in vertex form. Then identify the vertex.

3. $y = x^2 + 6x + 3$

4. $y = x^2 - 4x - 4$

Example #5: The height y (in feet) of a baseball t seconds after it is hit is given by this function: $y = -16t^2 + 96t + 3$. Find the maximum height of the baseball.