Algebra 2 **Name**_____
Notes: 3.3 **Date**_____ **Block**_____

Warm Up **Factor the expression *completely*.**

1. $25z^2 - y^2$
2. $25x^2 - 1$
3. $49x^2 + 28xy + 4y^2$
4. $\frac{1}{x^2} - 1$
5. $8y^2 - 2$
6. $4rs^2 - 4rs + r$

Review
Solve the equation using square roots.

1. $x^2 + 4x + 4 = 36$
2. $x^2 - 6x + 9 = 1$
3. $x^2 - 22x + 121 = 81$

Core Concept

Completing the Square

Words: _____

Algebra: _____

Example #1

Find the value of c that makes $x^2 + 14x + c$ a perfect square trinomial. Then write the expression as the square of a binomial.

(a) $x^2 + 8x + c$ (b) $x^2 - 2x + c$ (c) $x^2 - 9x + c$

Example #2

Solve $x^2 - 10x + 7 = 0$ by completing the square.

Example #3

Solve $3x^2 + 12x + 15 = 0$ by completing the square.

Additional Practice

Solve the equation by completing the square.

(a) $x^2 - 4x + 8 = 0$

(b) $x^2 + 8x - 5 = 0$

(c) $-3x^2 - 18x - 6 = 0$

(d) $4x^2 + 32x = -68$

(e) $6x(x + 2) = -42$

(f) $2x(x - 2) = 200$

Example #4

Write $y = x^2 - 12x + 18$ in vertex form. Then identify the vertex.

Write the quadratic function in vertex form. Then identify the vertex.

(a) $y = x^2 - 8x + 18$ **(b)** $y = x^2 + 6x + 4$ (c) $y = x^2 - 2x - 6$

Example #5

The height y (in feet) of a baseball t seconds after it is hit can be modeled by the function $y = -16t^2 + 96t + 3$. Find the maximum height of the baseball. How long does the ball take to hit the ground?

WHAT IF? The height of the baseball can be modeled by $y = -16t^2 + 80t + 2$. Find the maximum height of the baseball. How long does the ball take to hit the ground?