

Section 4.7 Notes Day 1

Objective: Writing Quadratic Functions in Vertex Form.

Warm-Up: Identify the vertex & the transformations of $g(x)$ from the parent function $f(x) = x^2$.

$$g(x) = -2(x + 5)^2 - 7$$

$$g(x) = \frac{1}{3}(x - 4)^2 + 2$$

When a quadratic function is in the standard form $f(x) = ax^2 + bx + c$, you can complete the square to write the function in vertex form.

Ex. Write the function in vertex form. $y = x^2 + 6x - 5$

Step 1: set equation = 0

Step 2: complete the square

Step 3: move constant back across =

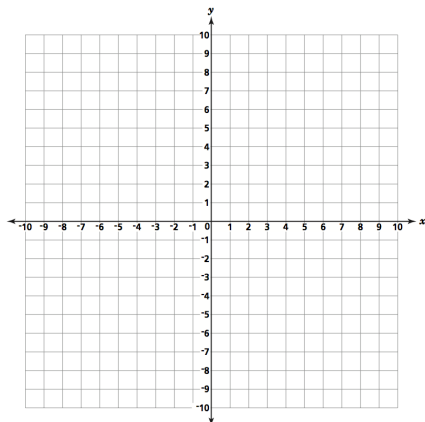
Step 4: rewrite in 'y=' form

Ex. 1) $y = x^2 - 6x + 3$

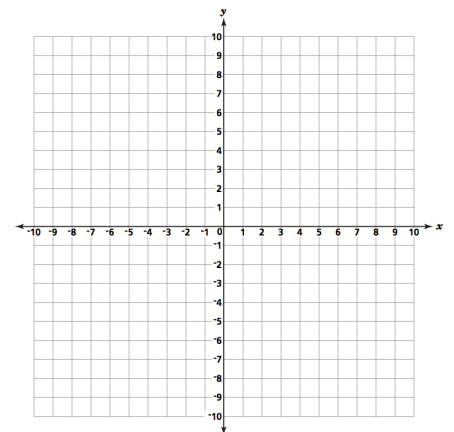
Ex. 2) $y = x^2 + 4x + 9$

Write the function in vertex form and graph:

3) $y = x^2 + 2x + 7$



4) $y = x^2 - 12x + 36$



If the coefficient of the quadratic term is not 1, then factor the coefficient from the quadratic and linear terms before completing the square.

Ex. $y = 2x^2 - 12x + 17$

Ex. $y = 4x^2 + 24x + 24$

5) $y = 4x^2 - 16x - 40$

6) $y = -2x^2 + 8x - 3$

Write the function in vertex form and graph:

7) $y = -2x^2 + 8x - 5$

8) $y = -x^2 - 4x + 1$

