SECONDARY MATH III
CHAPTER 5
GRAPHING QUADRATICS

NAME_____
DATE_____
CLASS_____

Reading Guide – Graphing Quadratics

1. **a.** For the quadratic function $f(x) = 2x^2 + 5x + 3$, $2x^2$ is the _____ term, $5x$ is the _____ term, and 3 is the _____ term.

   b. For the quadratic function $f(x) = -4 + x - 3x^2$, $a =$ _____, $b =$ _____, and $c =$ _____.

2. Consider the quadratic function $f(x) = ax^2 + bx + c$, where $a \neq 0$.

   a. The graph of this function is a _____.

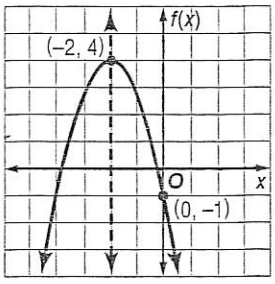
   b. The y-intercept is _____.

   c. The axis of symmetry is the line _____.

   d. If $a > 0$, then the graph opens _____ and the function has a _____ value.

   e. If $a < 0$, then the graph opens _____ and the function has a _____ value.

3. Refer to the graph at the right as you complete the following sentences.



   a. The curve is called a _____.

   b. The line $x = -2$ is called the _____.

   c. The point $(-2, 4)$ is called the _____.

   d. Because the graph contains the point $(0, -1)$, -1 is the _____.

Remember What You Learned

4. How can you remember the way to use the x^2 term of a quadratic function to tell whether the function has a maximum or a minimum value?

Graphing Quadratic Functions

Complete parts a–c for each quadratic function.

a. Find the y-intercept, the equation of the axis of symmetry, and the x-coordinate of the vertex.

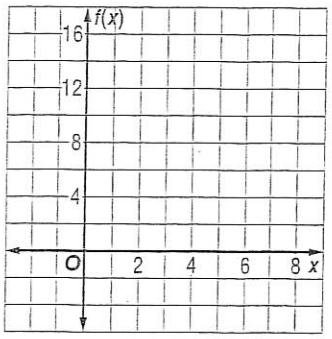
b. Make a table of values that includes the vertex.

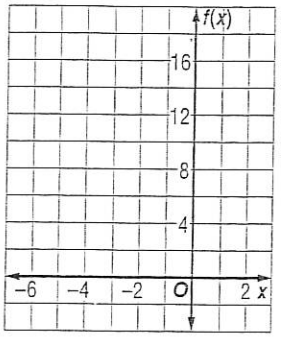
c. Use this information to graph the function.

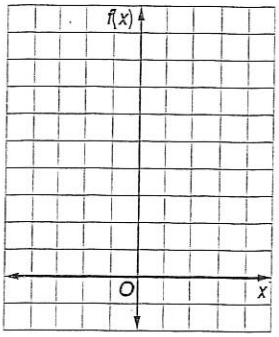
1. $f(x) = x^2 - 8x + 15$

2. $f(x) = -x^2 - 4x + 12$

3. $f(x) = 2x^2 - 2x + 1$







Determine whether each function has a maximum or a minimum value, and find the maximum or minimum value of each function. Then state the domain and range of the function.

4. $f(x) = x^2 + 2x - 8$

5. $f(x) = x^2 - 6x + 14$

6. $v(x) = -x^2 + 14x - 57$

7. $f(x) = 2x^2 + 4x - 6$

8. $f(x) = -x^2 + 4x - 1$

9. $f(x) = -\frac{2}{3}x^2 + 8x - 24$

10. **GRAVITATION** From 4 feet above a swimming pool, Susan throws a ball upward with a velocity of 32 feet per second. The height $h(t)$ of the ball t seconds after Susan throws it is given by $h(t) = -16t^2 + 32t + 4$. Find the maximum height reached by the ball and the time that this height is reached.