Name: _____ /10 **Instructor:** _____

Date: _____ **Class Time:** _____

Unit 9 Module C Notes Sections 24.5 – 24.7

View the PowerPoint, Videos, or Textbook for Module 9C.

Vocabulary ***Fill in the blanks.***

1. (Section 24.5) The graph of $f(x) = ax^2 + bx + c$ where $a \neq 0$ is a **parabola** whose _____ has *x-value* of $-\frac{b}{2a}$.

2. (Section 24.5) The graph of $g(x) = a(x-h)^2 + k$ looks like the graph of $f(x) = ax^2$ except that $g(x)$ is translated _____ units horizontally (left or right) and _____ units vertically (up or down).

3. (Section 24.5) The max or min value of a quadratic function occurs at the _____ of its graph.

4. (Section 24.5) The graph of $f(x) = a(x-h)^2 + k$ has vertex _____ .

The graph of $f(x) = ax^2 + k$ has vertex _____ .

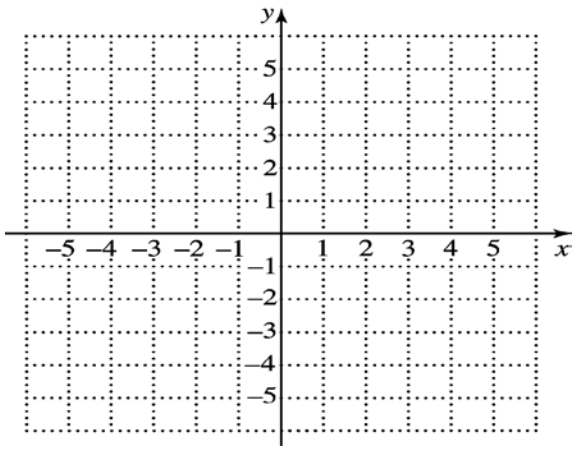
The graph of $f(x) = a(x-h)^2$ has vertex _____ .

5. (Section 24.6) The *x-value* of the vertex can be obtained by using the formula *x* = _____ . To find the *y-value*, just plug in the *x-value* into the function.

Problems ***Show ALL steps.***

1. (Section 24.5) Graph $f(x) = (x+1)^2$. Find the intercepts, if they exist and label the vertex and line of symmetry.

x	$f(x)$		
_____	_____	**Vertex**	**Line of symmetry** _____
_____	_____	**x intercept**	
_____	_____	**y intercept**	



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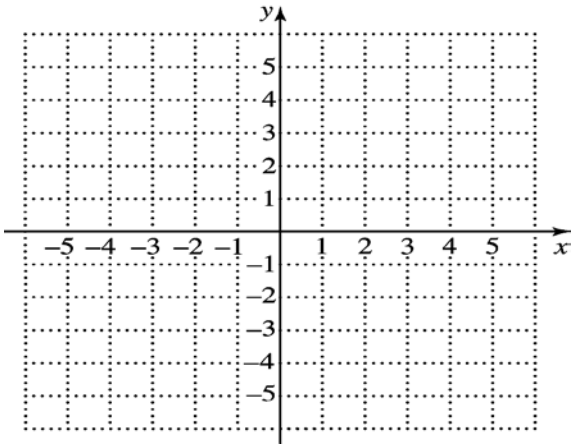
2. (Section 24.6) Given $f(x) = -4x^2 - 7x + 2$ find the vertex, line of symmetry, the maximum or minimum and sketch the graph. **Write your answers with fractions reduced to lowest terms.**

Vertex:_____

Line of symmetry:_____

Maximum or Minimum:_____



3. (Section 24.7) The value of a share of a particular stock in dollars can be represented by $V(x) = x^2 - 6x + 13$ where x is the number of months after January 2011.

The lowest value of a share of this particulate stock V(x) reached $ _____ .

The lowest value occurred _____ months after January 2011 or on _____ (mmyyyy).

4. (Section 24.7) A farmer has 100 yards of fencing [Perimeter $P = 2l + 2w$]. What are the dimensions of the largest rectangular pen that the farmer can enclose [Area $A = lw$]? What is the maximum possible area? Hint: Complete the square to find the vertex (h, k) or use the vertex formula $\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$. **Intermediate steps must be shown.**

The maximum possible area is _____ yd^2 when the rectangular pen is

_____ yds. wide and _____ yds. long