NAME_____DATE_____
ALGEBRA II WORKSHEET: GRAPHING IN VERTEX FORM

For each function, complete the following prompts and graph on the axes provided.
Show any work on a separate sheet of paper.

1. $y = (x - 5)^2 - 1$

    Vertex_____

    Axis of Symmetry_____

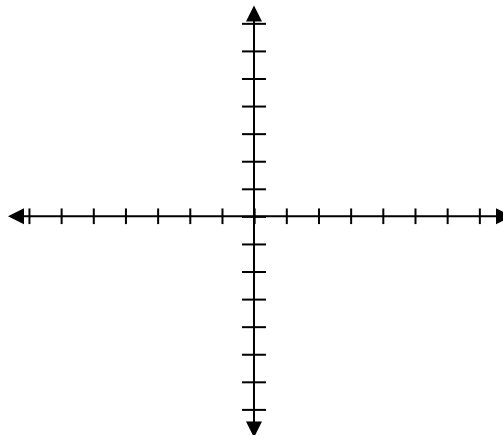   x-intercept(s)_____

    y-intercept_____

    Concave Up or Down?_____

    One Other Point on the Graph_____

    Domain_____

    Range_____

2. $y = -2(x + 3)^2$

    Vertex_____

    Axis of Symmetry_____

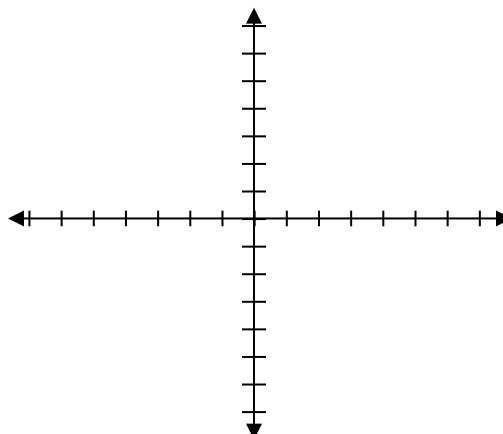   x-intercept(s)_____

    y-intercept_____

    Concave Up or Down?_____

    One Other Point on the Graph_____

    Domain_____

    Range_____

3. $y = -(x - 2)^2 - 3$

       Vertex_____

       Axis of Symmetry_____

       x-intercept(s)_____

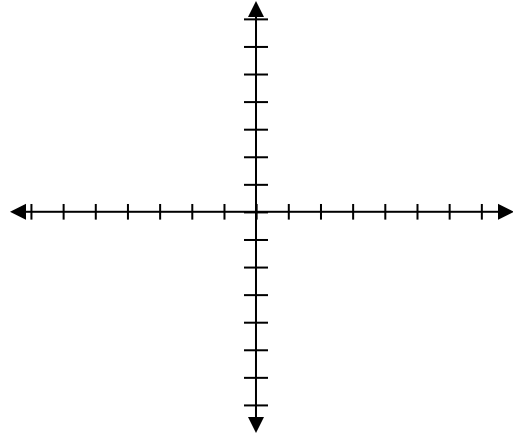   y-intercept_____

       Concave Up or Down?_____

       One Other Point on the Graph_____

       Domain_____

       Range_____

4. $y = 3(x + 4)^2 - 6$

       Vertex_____

       Axis of Symmetry_____

       x-intercept(s)_____

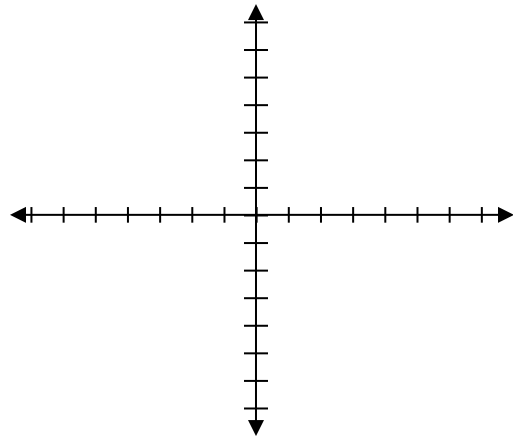   y-intercept_____

       Concave Up or Down?_____

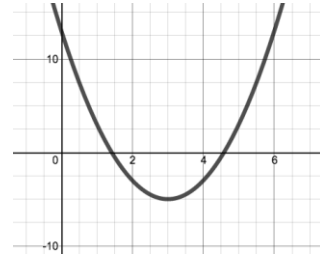   One Other Point on the Graph_____

       Domain_____

       Range_____

5. Find three points on the graph of $y = (x - 1)^2 + 5$.

6. The equation that represents the given graph is in the form $y = a(x - h)^2 + k$.

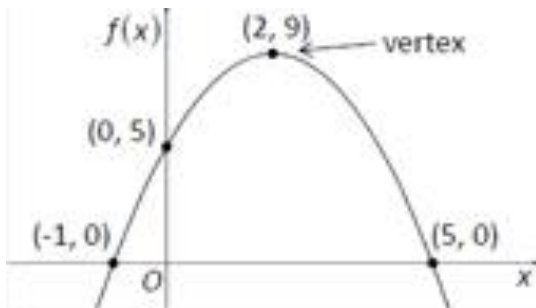   a. Is the value of "a" positive or negative? Explain.

    b. What are the values of "h" and "k"?

7. A portion of the graph of a quadratic function $f(x)$ is shown in the xy - plane. Selected values of a linear function $g(x)$ are shown in the table.

IN THE "COMPARISON" BOXES BELOW, WRITE THE APPROPRIATE SYMBOL: >, <, OR =.

First Quantity	Comparison	Second Quantity
The y-coordinate of the y-intercept $f(x)$	▼	The y-coordinate of the y-intercept $g(x)$
$f(3)$	▼	$g(3)$
Maximum value of $f(x)$ on the interval -5 ≤ x ≤ 5	▼	Maximum value of $g(x)$ on the interval -5 ≤ x ≤ 5
$\dfrac{f(5)-f(2)}{5-2}$	▼	$\dfrac{g(5)-g(2)}{5-2}$

x	g(x)
-4	7
-1	1
2	-5
5	-11

8-10. Given the functions below, answer each question.

$$f(x) = -x^2 + 4 \qquad\qquad g(x) = 2x^3 - 5 \qquad\qquad h(x) = 2\sqrt{3x+5}$$

8. Find $f(3x-2)$.

9. Find $g(3) \cdot (f \cdot g)(x)$

10. Find the value(s) of x such that $h(x) = 12$.

8. The graph in #6 can also be represented in the form $y = ax^2 + bx + c$.

    a. Is the value of "a" positive or negative? Explain.

    b. Is the value of "c" positive or negative? Explain.

    c. Is the value of $b^2 - 4ac$ positive, zero, or negative?   Explain.

9. The New York Transit Authority is considering changing their subway fares. A study determined that the daily revenue earned from people riding the subway can be represented by $R = 370x - 5x^2 + 19{,}800$, where x represents the fare in dollars and R represents the daily revenue. What fare should the city charge in order to earn the greatest revenue?