HW L3.2

Name _____

1. Identify the parent function. Then describe the transformations that produce the graph of f.

   a. $f(x) = |x + 7|$

   b. $f(x) = 4x^3 - 11$

2. The graph of $y = x^3$ is shifted right 5, down 2 and then stretched vertically by a factor of 8. Write an equation that represents the resulting graph.

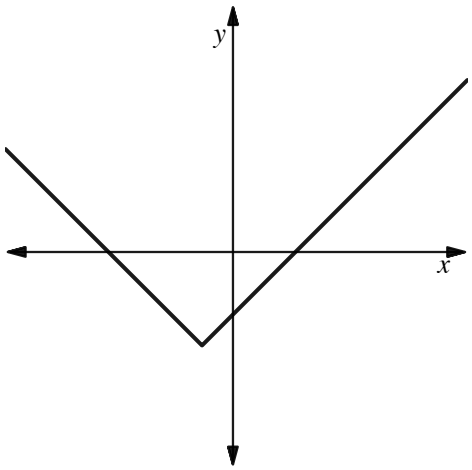
3. Which of the following equations could represent the graph shown?

   A) $y = |x - 1| - 2$

   B) $y = |x + 1| - 3$

   C) $y = -|x + 1| + 3$

   D) $y = |-x| + 3$



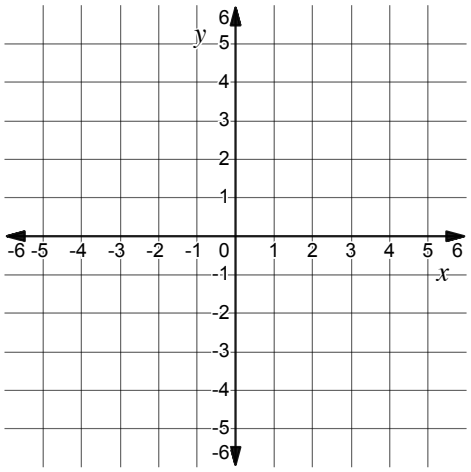
4. Identify the domain and range of $y = -\frac{1}{2}(x - 4)^2 + 6$.

5. Identify the domain and range of $y = 1 + 3\sqrt{x + 5}$

6. Let $f(x) = x^2$ and $g(x) = af(x - b) + c$. Values of g for selected values of x are given in the table. Find the values of a, b, and c.

x	$g(x)$
-5	15
-4	9
-3	7
-2	9
-1	15
0	25
1	39
2	57

7. Graph $y = 3 + \sqrt{-x}$.



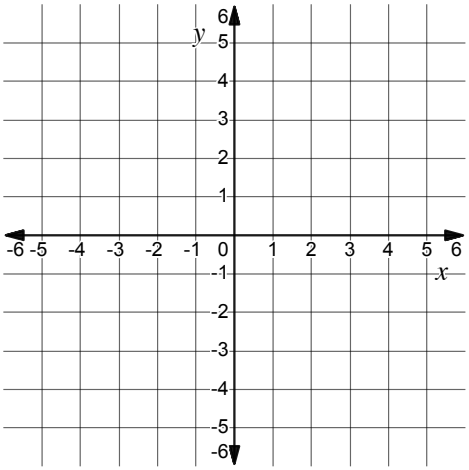
8. Let $f(x) = \frac{1}{x+4} - 2$.

a. Identify the parent function of f and the transformations that occurred.

b. At which x-value(s), if any, does f have a vertical asymptote? How do you know?

c. Find $\lim_{x \to \infty} f(x)$.

d. Sketch a graph of f.



9. The graph of the function $y = x^3$ was transformed according to the transformations given below, resulting in the graph of the function $y = a(x-b)^3 + c$, for some constants a, b, and c.

1) reflection over the x-axis
2) vertical shrink
3) horizontal shift left
4) vertical shift up

Eleanor was asked to provide a possible value for a, b, and c. She said $a = -\frac{1}{3}$, $b = 4$, and $c = 7$. Determine if each of her values are reasonable and give reasons for your answers.

10. The complete graph of $y = g(x)$ is shown. Let $f(x) = g(-x) + 2$. Sketch the graph of f on the same coordinate grid.