

REVIEW FOR ABSOLUTE VALUE GRAPHING QUIZ

Name: _____ DUE: _____

SECTION 1: KEY FEATURES OF ABSOLUTE VALUE GRAPHS

1. $y = |x|$

Domain: _____

Range: _____

Vertex: (,) Slope: _____

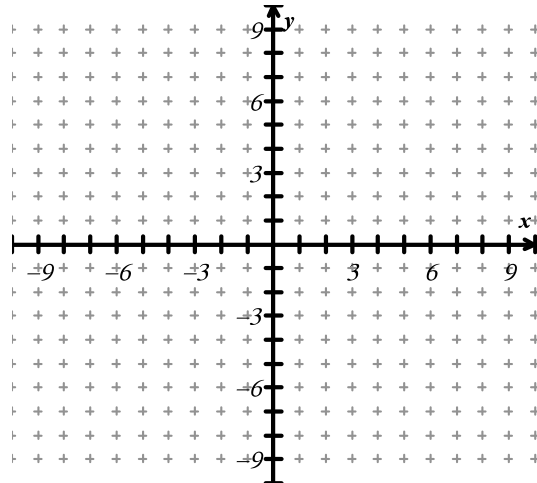
y-intercept: _____

zeros (roots, x-intercepts, solutions): _____

Increasing: _____

Decreasing: _____

End Behavior: *As $x \rightarrow +\infty$ then $f(x) \rightarrow$ _____*
As $x \rightarrow -\infty$ then $f(x) \rightarrow$ _____



2.

Function	Direction/Opening (up or down)	Vertex	Vertical Stretch, Shrink, or None
a. $y = \frac{1}{4} x + 4 - 9$		(,)	
b. $y = -2 x + 1 + 6$		(,)	
c. $y = 4 x - 3 $		(,)	
d. $y = -\frac{1}{2} x + 3$		(,)	
e. $y = -5 x - 8 - 5$		(,)	

Describe all the transformations from the original function $f(x)$.

3. $y = 2|x - 3| + 20$

4. $y = -\frac{1}{4}|x + 1| - 6$

5. $y = \frac{4}{3}|x + 5|$

6. $y = -|x| - 8$

7. Find the domain and range of each function (do not use a calculator!)

	Domain	Range
a. $y = x $		
b. $y = - x $		
c. $y = x + 2 + 3$		
d. $y = x - 5$		
e. $y = - x - 9$		
e. $y = - x - 3 + 10$		

8. Write the equation of the absolute value function that has a vertex of $(-7, 1)$, opens up, and is a vertically shrink. There will be multiple answers =)
9. Write the equation of the absolute value function that has a vertex of $(2, -5)$, opens down, and is a vertically stretch. There will be multiple answers =)

Circle all answers that apply.

8. Which functions have a horizontal shift:

$$y = |x + 5| - 3 \quad y = |x| + 10 \quad y = 2|x - 1| + 7 \quad y = |x|$$

9. Which functions have a turning point at $(2, 0)$:

$$y = |x + 2| \quad y = |x| + 2 \quad y = |x - 2| \quad y = 4|x - 2|$$

10. Which functions have a range of $(-\infty, -3]$:

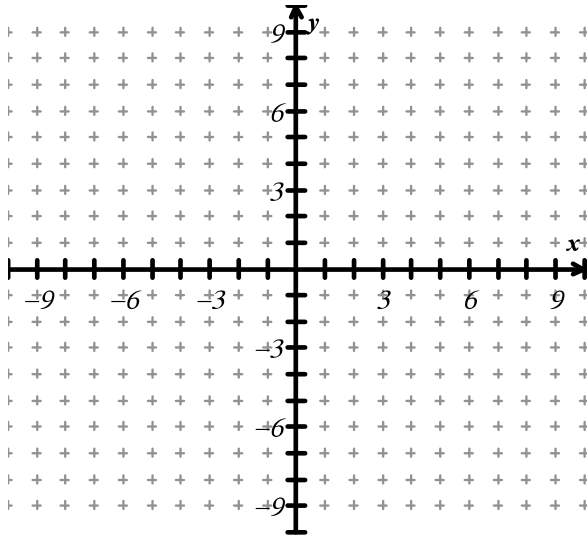
$$y = |x - 2| - 3 \quad y = -|x + 5| - 3 \quad y = -|x + 3| - 1 \quad y = -|x| + 3$$

11. Which functions have a maximum point?

$$y = |x| \quad y = -|x + 4| - 3 \quad y = -|x - 1| + 10 \quad y = |x| + 1$$

SECTION 2: GRAPHING AND TRANSFORMATIONS

1. $f(x) = -3|x - 4| + 3$



$a =$ _____ $h =$ _____ $k =$ _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

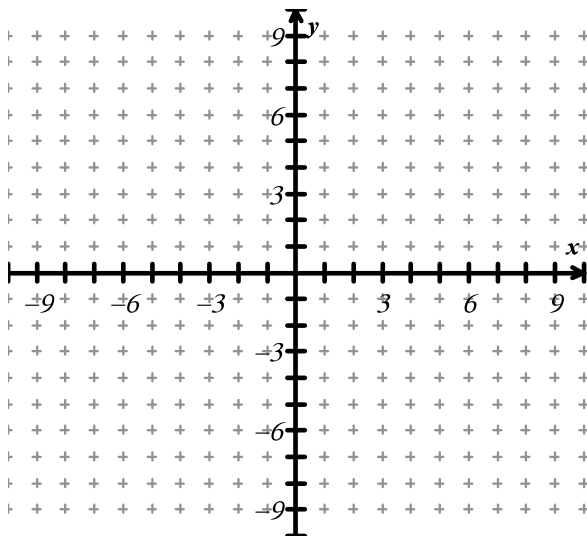
Range: _____

Increasing: _____

Decreasing: _____

End Behavior: $As x \rightarrow +\infty$ then $f(x) \rightarrow$ _____
 $As x \rightarrow -\infty$ then $f(x) \rightarrow$ _____

2. $y = -\frac{1}{2}|x - 2| + 4$



$a =$ _____ $h =$ _____ $k =$ _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

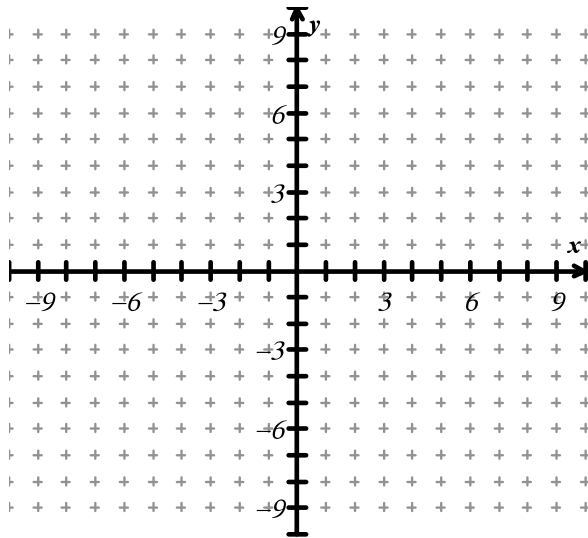
Range: _____

Increasing: _____

Decreasing: _____

End Behavior: $As x \rightarrow +\infty$ then $f(x) \rightarrow$ _____
 $As x \rightarrow -\infty$ then $f(x) \rightarrow$ _____

3. $y = |x - 3| - 2$



a = _____ h = _____ k = _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

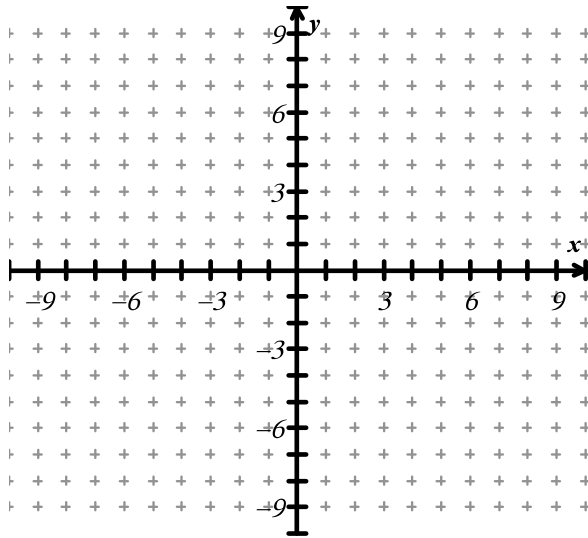
Range: _____

Increasing: _____

Decreasing: _____

End Behavior: $As x \rightarrow +\infty$ then $f(x) \rightarrow$ _____
 $As x \rightarrow -\infty$ then $f(x) \rightarrow$ _____

4. $y = 3|x|$



a = _____ h = _____ k = _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

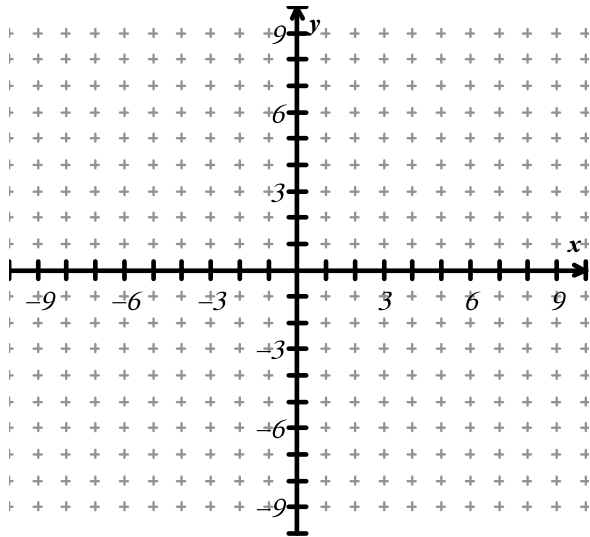
Range: _____

Increasing: _____

Decreasing: _____

End Behavior: $As x \rightarrow +\infty$ then $f(x) \rightarrow$ _____
 $As x \rightarrow -\infty$ then $f(x) \rightarrow$ _____

5. $y = \frac{3}{5}|x| - 6$



a = _____ h = _____ k = _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

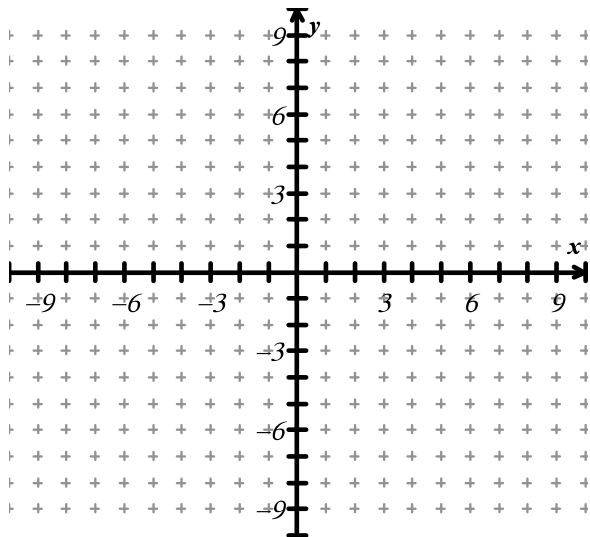
Range: _____

Increasing: _____

Decreasing: _____

End Behavior: *As $x \rightarrow +\infty$ then $f(x) \rightarrow$ _____*
As $x \rightarrow -\infty$ then $f(x) \rightarrow$ _____

6. $y = |x + 4|$



a = _____ h = _____ k = _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

Range: _____

Increasing: _____

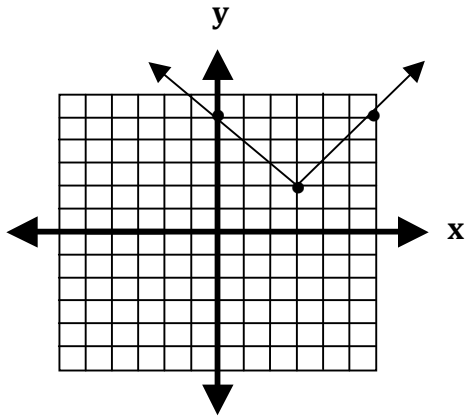
Decreasing: _____

End Behavior: *As $x \rightarrow +\infty$ then $f(x) \rightarrow$ _____*
As $x \rightarrow -\infty$ then $f(x) \rightarrow$ _____

SECTION 3: WRITING EQUATIONS OF GRAPHS

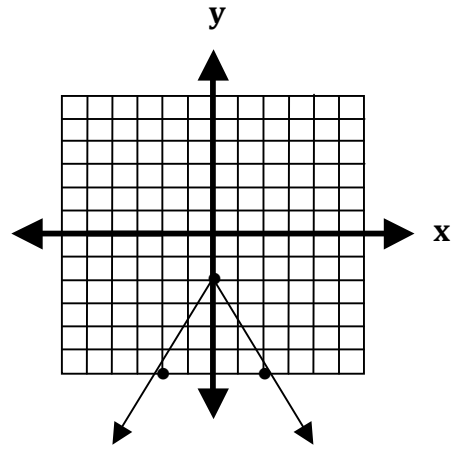
Given the absolute value equation graph, write the absolute value equation.

1.



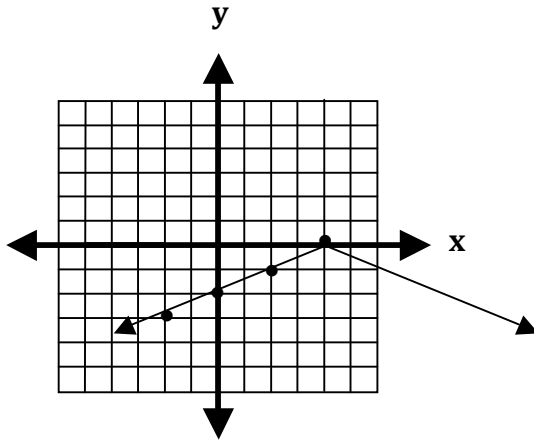
Equation: _____

2.



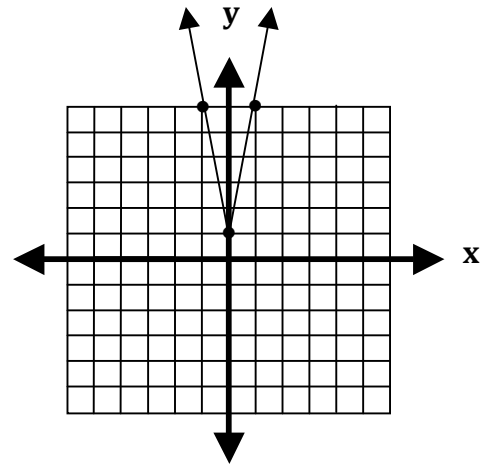
Equation: _____

3.



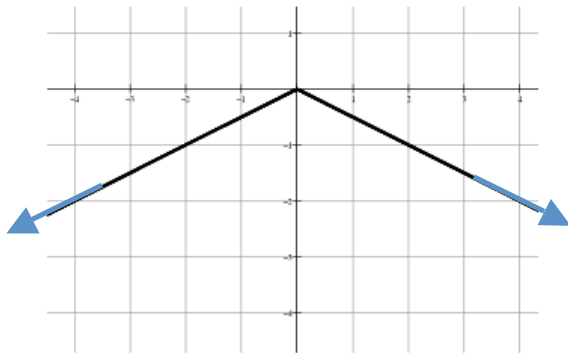
Equation: _____

4.



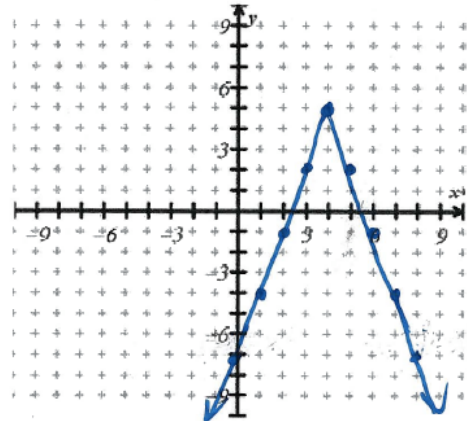
Equation: _____

5.



Equation: _____

6.



Equation: _____

SECTION 4: CALCULATOR AND GRAPH SKETCHING

1. Use the **CALCULATOR** to find the zero(s) and y-intercept.

a. $y = \frac{3}{2}|x + 1| - 5$

Zero(s): _____

y-intercept: _____

b. $y = -3|x - 3| + 2$

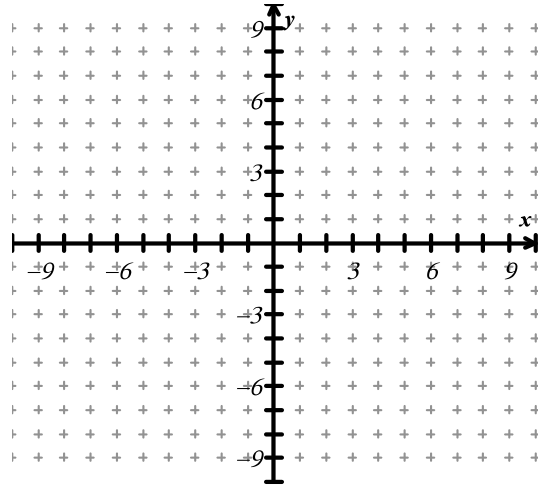
Zero(s): _____

y-intercept: _____

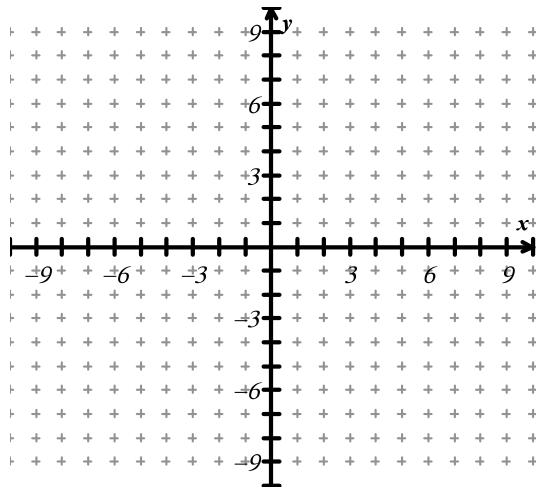
2 a. Graph the Absolute Value Function: $y = |x|$

b. Graph the inverse of the function.

c. Is the inverse a function? Explain.



3. Graph an Absolute Value Function that has an relative maximum at (3,4) and is stretched by a factor of 2 and opens down.

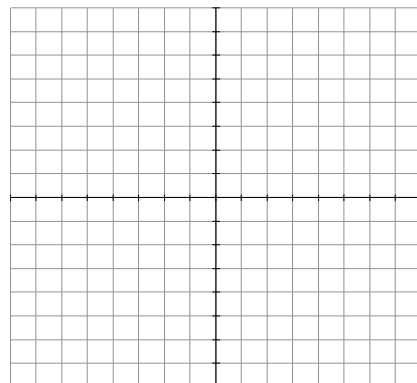


4. Sketch an absolute value function whose vertex is at (0,2) with the following end behavior:

$As x \rightarrow +\infty \text{ then } f(x) \rightarrow +\infty$

$As x \rightarrow -\infty \text{ then } f(x) \rightarrow +\infty$

Discuss the zeros of this function.



Absolute Value Quick Questions

Name: _____

Circle either "A" or "B".

	QUESTION	ANSWER A	ANSWER B
1	What is the vertex: $y = 3 x - 1 + 2$	(1, 2)	(-1, 2)
2	What is the vertex: $y = 2 x $	(2, 0)	(0, 0)
3	What is the vertex: $y = x + 5$	(5, 0)	(0, 5)
4	The graph of $y = -2 x + 1 - 3$ is	Vertical Stretched	Vertical Shrink
5	The graph of $y = -\frac{3}{5} x + 3 + 10$ is	Vertically Stretched	Vertical Shrink
6	The graph of $y = 15 x $ is	Vertically Stretched	Vertical Shrink
7	The graph of $y = \frac{5}{3} x + 2 - 1$ is	Vertically Stretched	Vertical Shrink
8	The graph of: $y = \frac{5}{3} x + 2 - 1$	Opens Up	Opens Down
9	The graph of: $y = -2 x + 1 - 3$	Opens Up	Opens Down
10	The graph of $y = 3 x - 2$ is:	Translated Vertically	Translated Horizontally
11	The graph of $y = 3 x - 2$ is:	Translated Left 2	Translated Down 2
12	In order for the graph to be a vertical shrink, what will be the value of a	$-1 < a < 1$	$a > 1$
13	Domain of: $y = -2 x + 1 - 3$	$(-\infty, \infty)$	$-\infty < x < 1$
14	Range of: $y = 3 x - 1$	$(-\infty, 3]$	$[-1, \infty)$
15	Range of: $y = - x - 2$	$(-\infty, -2]$	$[-2, -\infty)$
16	Range of: $y = - x - 5 + 4$	$(-\infty, 4]$	$[4, \infty)$
17	How do you find a y-intercept?	Substitute 0 for y and solve	Substitute 0 for x and solve
18	The end behavior of: $y = -2 x + 3 - 5$ As $x \rightarrow +\infty$ then $f(x) \rightarrow$ _____	∞	$-\infty$