REVIEW FOR ABSOLUTE VALUE GRAPHING QUIZ

Name: _____ DUE: _____

1. $y=|x|$

Domain: _____

Range: _____

Vertex: (,) Slope: _____

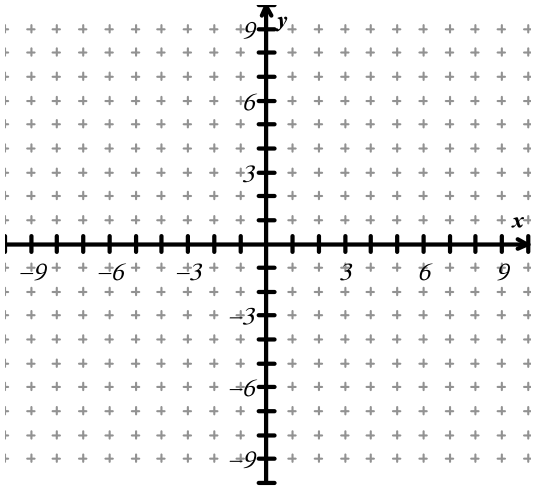
y-intercept: _____

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

Increasing: _____

Decreasing: _____

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



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. 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: _____

Circle all answers that apply.

9. Which functions have a horizontal shift:

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

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

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

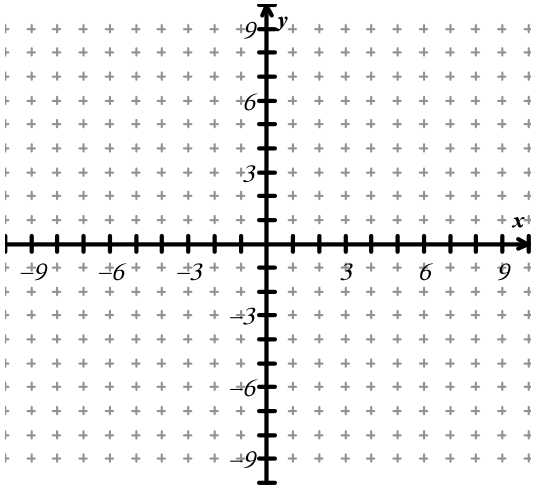
11. Which functions have a range of $(-\infty, -3]$:

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

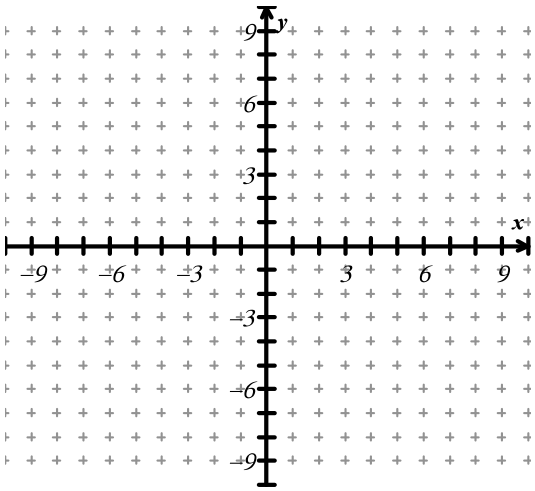
12. Which functions have a maximum point?

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

13. Graph the inverse of the Absolute Value Function (start out with the original function $y=|x|$)



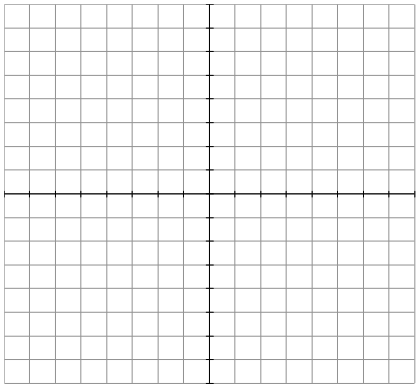
14. Graph an Absolute Value Function that has an relative maximum at (3,4) and is stretched by a factor of 2.



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

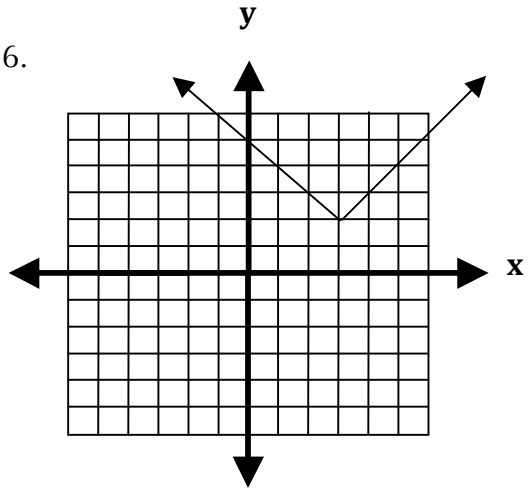
$As\ x \to +\infty\ then\ f(x) \to +\infty$
$As\ x \to -\infty\ then\ f(x) \to +\infty$

Discuss the zeros of this function.



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

16.



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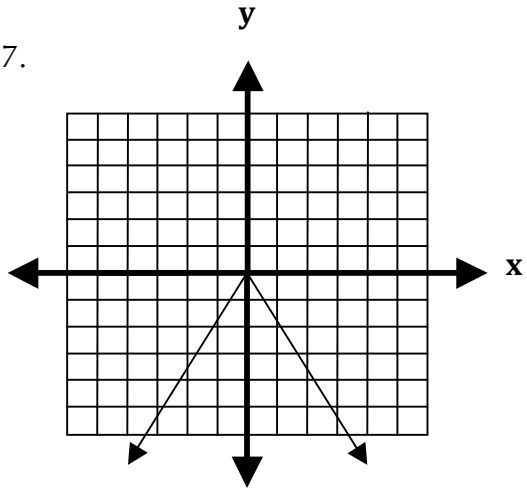
17.



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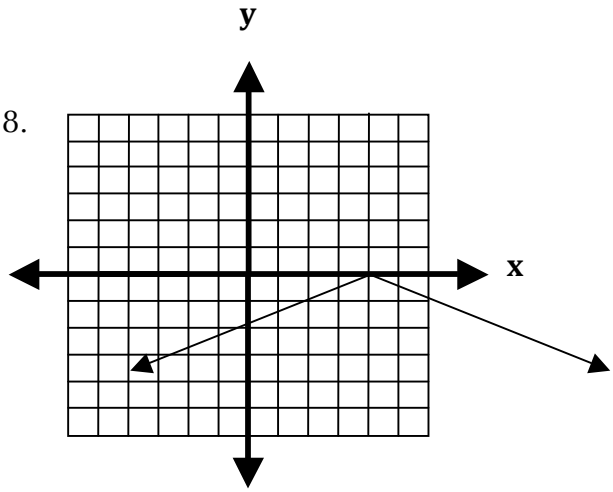

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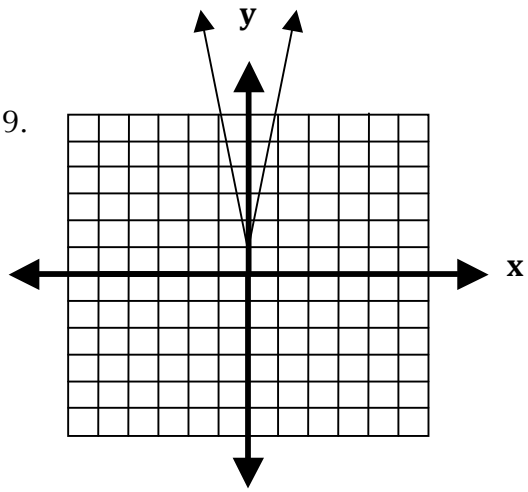

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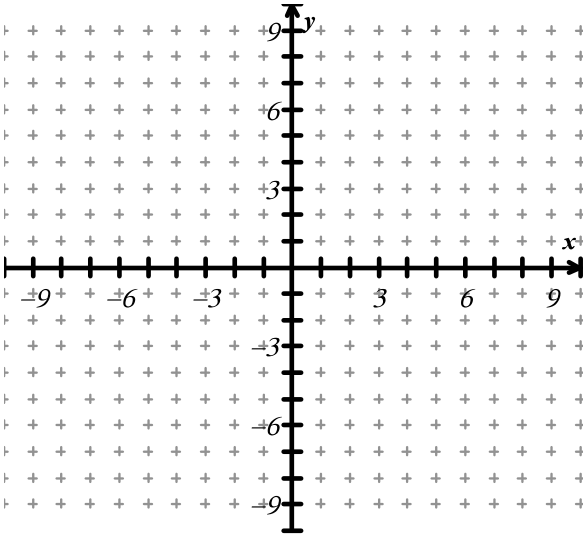
20. $f(x) = -3|x-4|+3$



a = _____ h = _____ k = _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

Range: _____

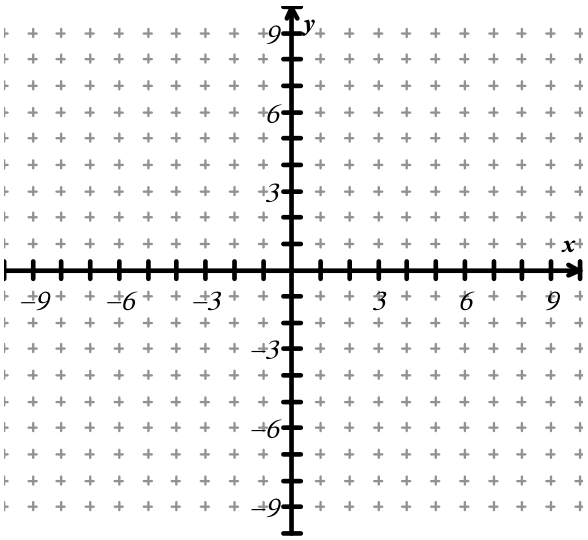
Increasing: _____

Decreasing: _____

End Behavior: _____

_____

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



a = _____ h = _____ k = _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

Range: _____

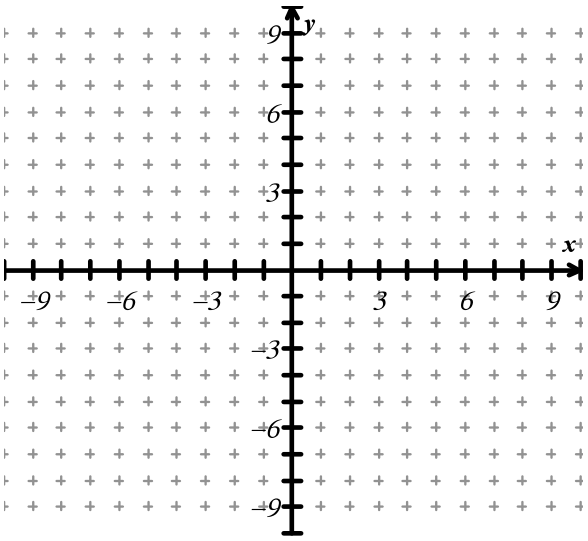
Increasing: _____

Decreasing: _____

End Behavior: _____

_____

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



a = _____ h = _____ k = _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

Range: _____

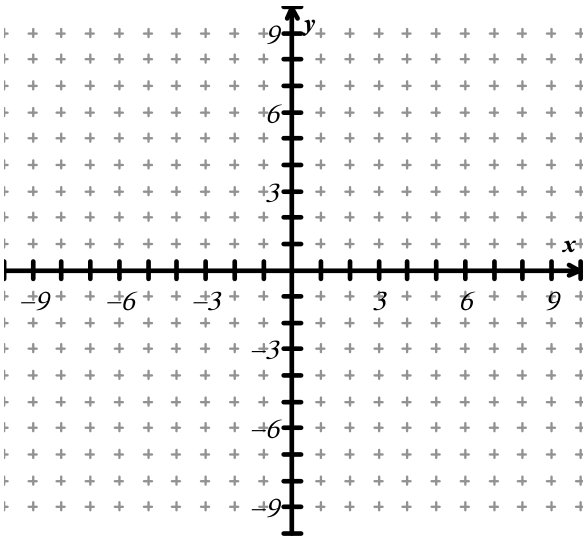
Increasing: _____

Decreasing: _____

End Behavior: _____

_____

23. $y=3|x|$



a = _____ h = _____ k = _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

Range: _____

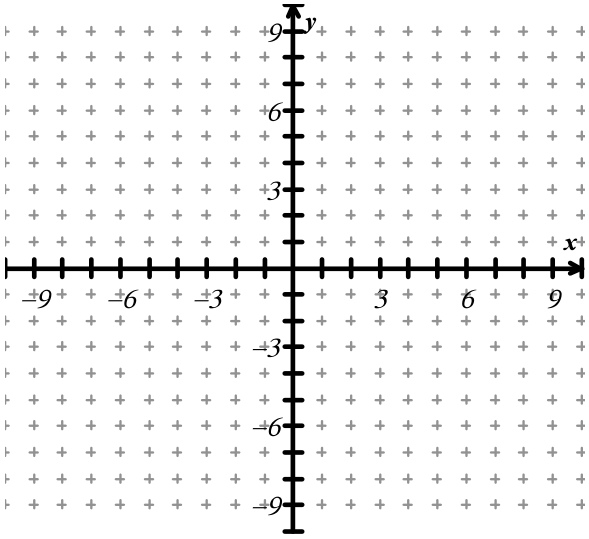
Increasing: _____

Decreasing: _____

End Behavior: _____

_____

24. $y=\frac{2}{5}|x|-6$



a = _____ h = _____ k = _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

Range: _____

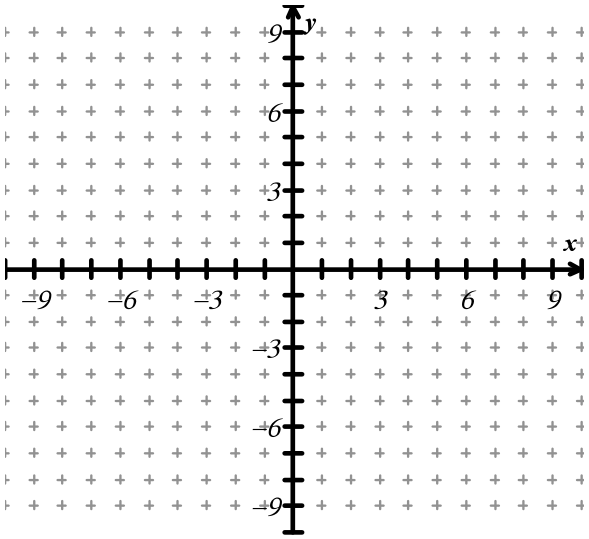
Increasing: _____

Decreasing: _____

End Behavior: _____

_____

25. $y=|x+4|$



a = _____ h = _____ k = _____

Vertex: _____

Slope: _____

y-intercept: _____

zeros: _____

Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

End Behavior: _____

_____

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	Vertically Stretched	Vertically Compressed
5	The graph of $y = -\frac{3}{5}\|x + 3\| + 10$ is	Vertically Stretched	Vertically Compressed
6	The graph of $y = 15\|x\|$ is	Vertically Stretched	Vertically Compressed
7	The graph of $y = \frac{5}{3}\|x + 2\| - 1$ is	Vertically Stretched	Vertically Compressed
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 vertically compressed, 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* $x \to +\infty$ *then* $f(x) \to$ _____	∞	$-\infty$