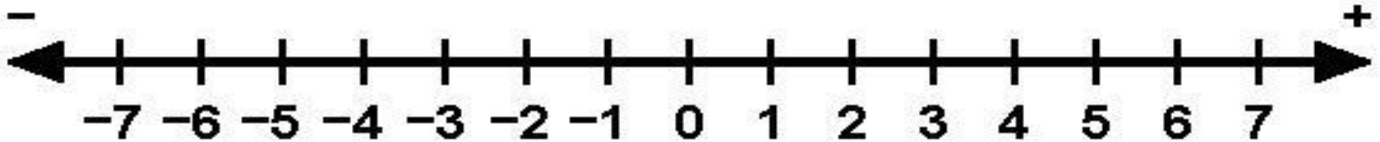


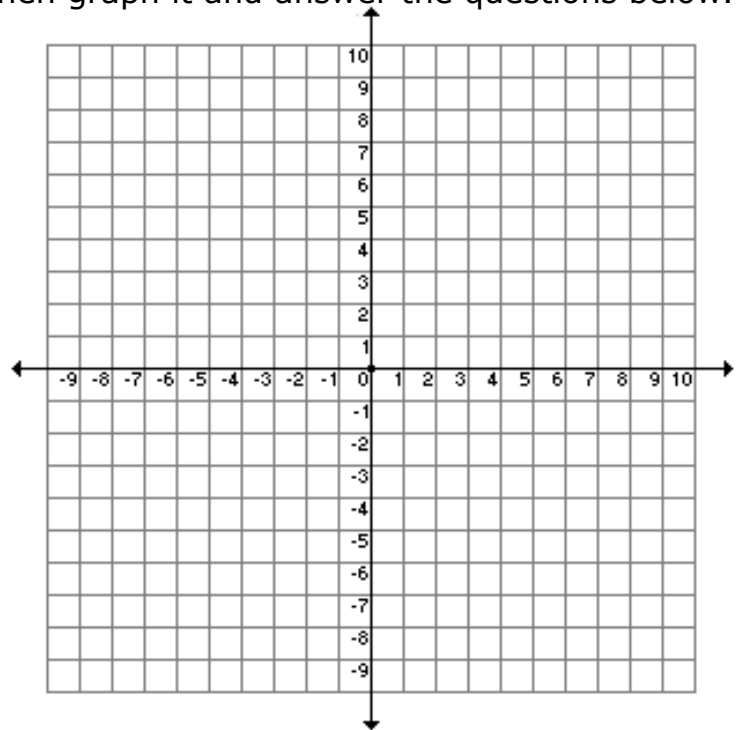
# 13.1 Absolute-Value Graphs & Transformations

Absolute Value:



1. Make a table of values for  $f(x) = |x|$ . Then graph it and answer the questions below.

X	Y
-4	
-3	
-2	
-1	
0	
1	
2	
3	
4	



Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Axis of Symmetry: \_\_\_\_\_

Asymptote(s)?: \_\_\_\_\_

Vertex: \_\_\_\_\_

Slope of the right side \_\_\_\_\_

Slope of the left side \_\_\_\_\_

## ***TRANSFORMATIONS:***

$$y = f(x - C): \text{Right} \quad y = f(x) + D: \text{Up}$$

$$y = f(x + C): \text{Left} \quad y = f(x) - D: \text{Down}$$

$$y = Af(x): A > 1 \text{ Vertical Stretch}$$

$$0 < A < 1 \text{ Vertical Compression}$$

$$A < 0 \text{ Vertical Reflection (x-axis)}$$

$$y = f(Bx): B > 1 \text{ Horizontal Compression}$$

$$0 < B < 1 \text{ Horizontal Stretch}$$

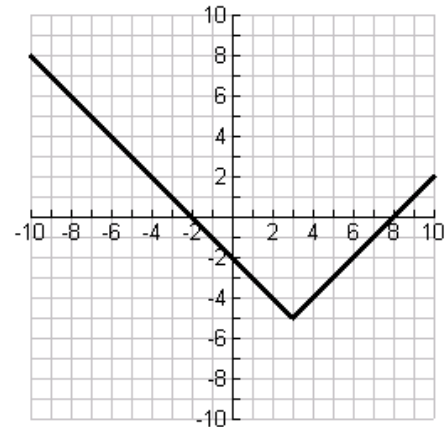
$$B < 0 \text{ Horiz. Reflection (y-axis)}$$

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$$y = Af(B(x \pm C)) \pm D$$

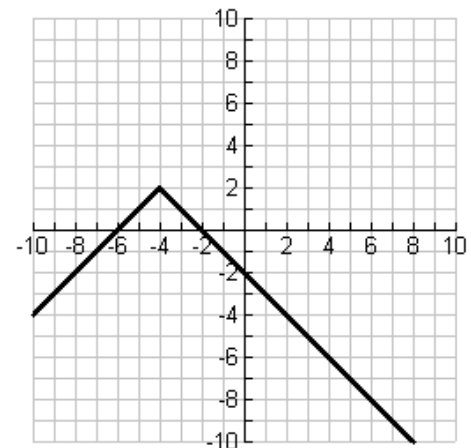
1. The function  $f(x) = |x|$  has been transformed as shown in the picture.

- Describe the transformation in words
- Describe the transformation using  $f(x)$  notation.
- Write the equation of the new function.
- If you moved the function in part c four units right and two units down, what would be the new equation?



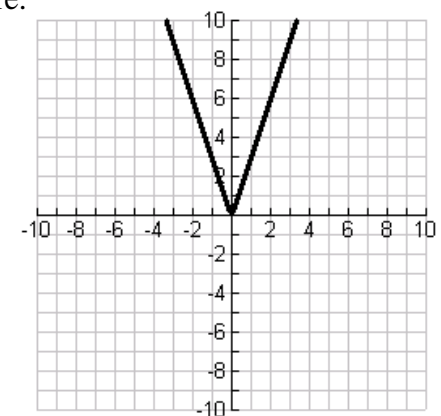
2. The function  $f(x) = |x|$  has been transformed as shown in the picture.

- Describe the transformation in words
- Describe the transformation using  $f(x)$  notation.
- Write the equation of the new function.
- If you moved the function in part g 4 units right and 2 units down, what would be the new equation?



3. The function  $f(x) = |x|$  has been transformed as shown in the picture.

- Describe the transformation in words
- Describe the transformation using  $f(x)$  notation.
- Write the equation of the new function.

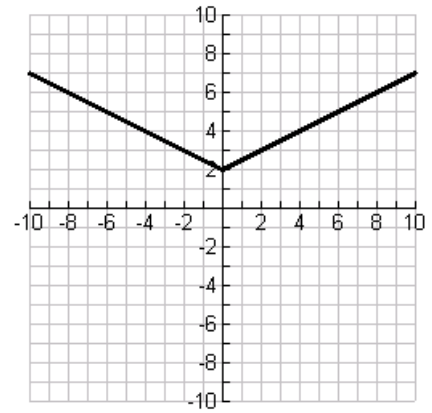


4. The function  $f(x) = |x|$  has been transformed as shown in the picture.

l. Describe the transformation in words

m. Describe the transformation using  $f(x)$  notation.

n. Write the equation of the new function.

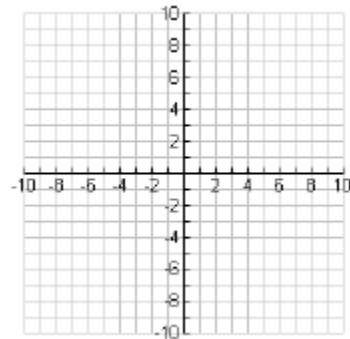
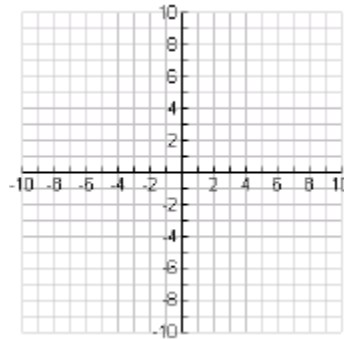
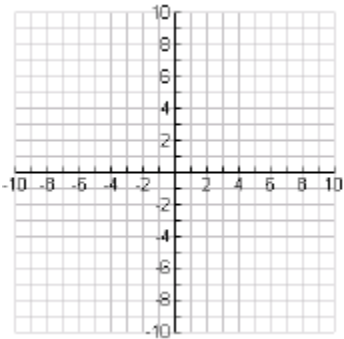


5. Given the equation of the absolute value function, graph and identify the following attributes.

o.  $g(x) = |-(x+3)|$

p.  $g(x) = -|x+4| - 2$

q.  $g(x) = 2|x-3| + 5$



Transformations:

Transformations:

Transformations:

Vertex:

Vertex:

Vertex:

Range:

Range:

Range:

6. Given the following equations, identify the transformations, vertex and range.

r.  $y = |2(x+1)|$

s.  $y = \left|\frac{1}{2}x\right| - 5$

t.  $y = |-3(x+2)| + 4$

Transformations:

Transformations:

Transformations:

Vertex:

Vertex:

Vertex:

Range:

Range:

Range: