

# Algebra 2

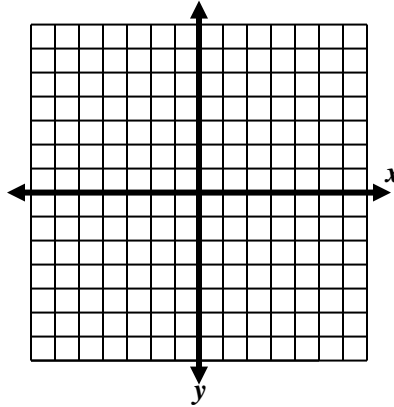
## Notes: Absolute Value Functions

Name \_\_\_\_\_

Date \_\_\_\_\_ Block \_\_\_\_\_

Graph the following piecewise function:

$$f(x) = \begin{cases} -x, & x < 0 \\ 0, & x = 0 \\ x, & x > 0 \end{cases}$$



The general equation of an Absolute Value Function is:

Transformations of the Absolute Value Parent Function $f(x) =  x $		
Transformation	$f(x)$ Notation	Examples
Vertical Translation		
Horizontal Translation		
Vertical Stretch/Compression		
Reflection		

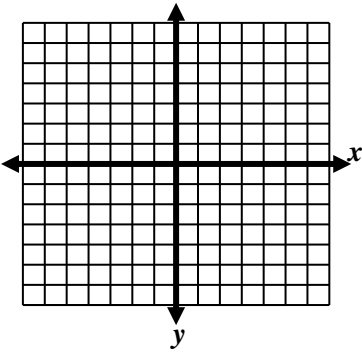
Let $g(x)$ be the indicated transformation(s) of $f(x) =  x $ . Write the rule for $g(x)$ .		
Vertical translation up three.	Vertical compression by a factor of $\frac{1}{2}$	Horizontal translation to the right 3 and vertical translation up 5.
Reflection in the $x$ -axis.	Vertical stretch by a factor of 3.	Reflection in the $x$ -axis, horizontal translation to the left 4, and vertical translation up 1.

Using the graph of  $f(x) = |x|$  as a guide, describe the transformations of each function and identify its domain and range. Then, graph each function.

1.  $f(x) = \frac{2}{5}|x|$

Transformations:

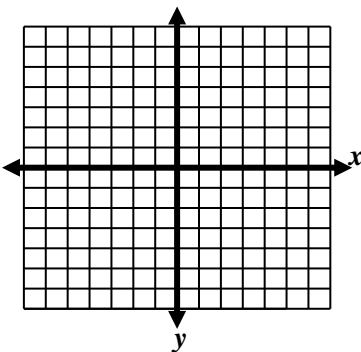
D: R:



2.  $f(x) = 2|x - 5| + 2$

Transformations:

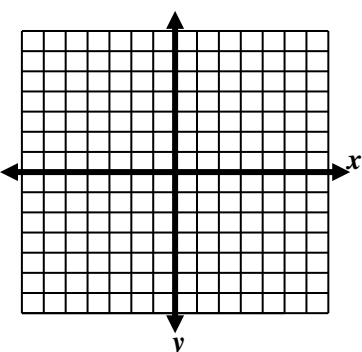
D: R:



3.  $f(x) = -\frac{2}{3}|x| - 3$

Transformations:

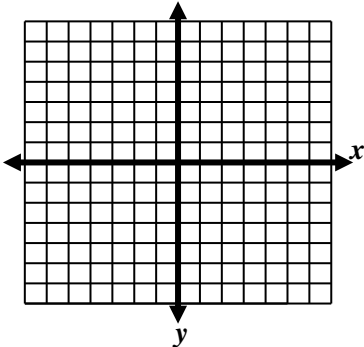
D: R:



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

Transformations:

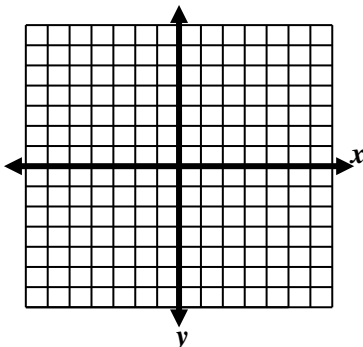
D: R:



5.  $f(x) = \frac{3}{2}|x + 2| - 1$

Transformations:

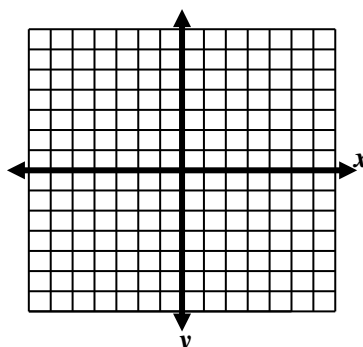
D: R:



6.  $f(x) = -3|x - 1|$

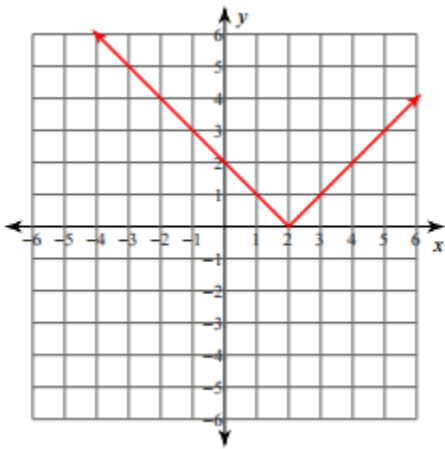
Transformations:

D: R:

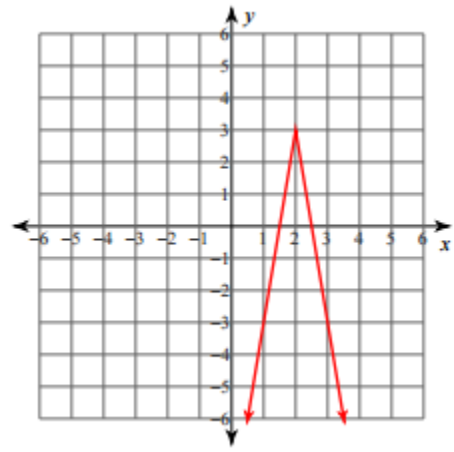


Write the equation of the absolute value function.

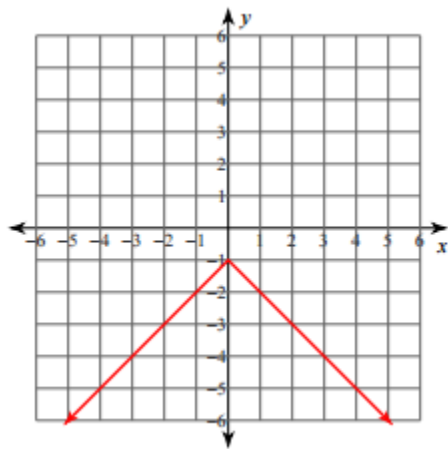
7.



8.



9.



10.

