

# Algebra 2

## WS: Absolute Value Functions

Name Key 2017-18  
Date 9/19 Block 3A

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

1.  $g(x) = |x| + 4$   
Vertical shift up 4  
D:  $(-\infty, \infty)$  R:  $[4, \infty)$
2.  $g(x) = -2|x - 3|$   
D:  $(-\infty, \infty)$  R:  $(-\infty, 0]$   
reflected in x-axis, vertical stretch by factor of 2, shift right 3
3.  $g(x) = 3.2|x + 1| - 2$   
vertical stretch by factor of 3.2, down 2, left 1  
D:  $(-\infty, \infty)$  R:  $[-2, \infty)$
4.  $g(x) = \frac{1}{2}|x| - 3$   
R:  $[-3, \infty)$   
vertical compression by  $\frac{1}{2}$ , down 3

Identify the vertex of the graph of each function.

5.  $f(x) = |x| + 4$

$(0, 4)$

6.  $f(x) = -2|x - 3|$

$(3, 0)$

7.  $f(x) = 3.2|x + 1| - 2$

$(-1, -2)$

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

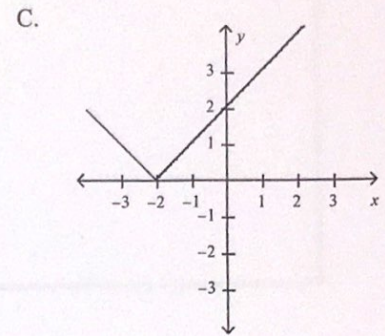
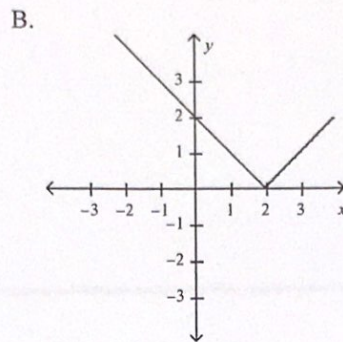
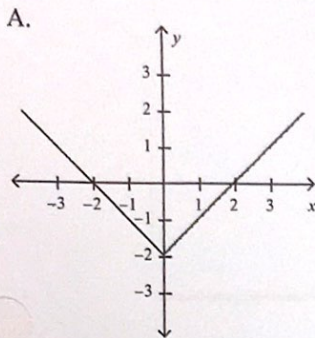
$(0, -3)$

Match the function with its graph.

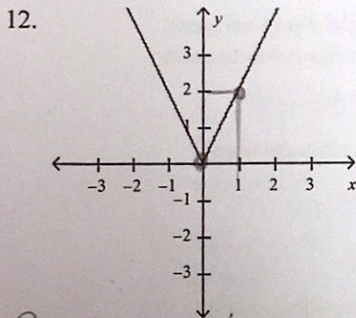
9.  $f(x) = |x - 2|$  **B**

10.  $g(x) = |x| - 2$  **A**

11.  $h(x) = |x + 2|$  **C**

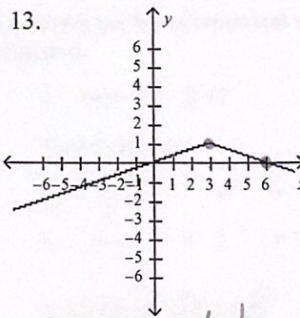


Write an equation for each absolute value function.

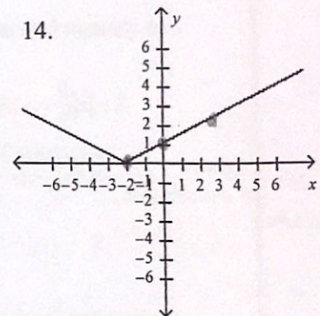


$f(x) = 2|x|$

Graph the absolute value function.



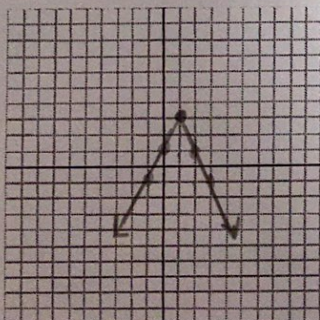
$f(x) = -\frac{1}{3}|x - 3| + 1$



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

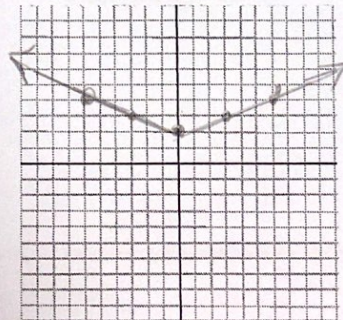
15.  $f(x) = -2|x - 1| + 3$

Vertex  $(1, 3)$



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

Vertex  $(0, 2)$



17.  $f(x) = |x + 1| - 2$

Vertex  $(-1, -2)$

