SECTION 2.7 Absolute Value Functions and Graphs

TRANSLATIONS OF FUNCTIONS

Vertical stretch of 5

Shift right 3 units (when you take it out the parenthesis it changes the sign)

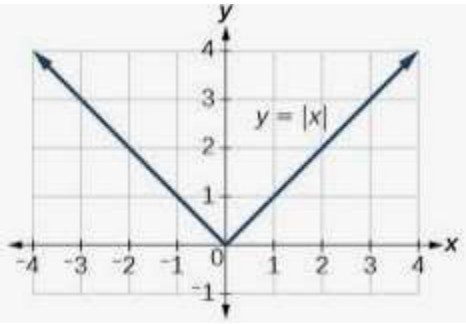
$$f(x) = -5(x-3)^2 + 7$$

Negative in front reflects across the x-axis

Shifts up 7 units

$f(x) = \sqrt{-x}$ means it reflects across the $y-$axis

Absolute Value Graph



1) Make a table of values for the following equation. Then graph the equation.

$y = |x| + 3$

plug the x value of the table into y = |x|+3

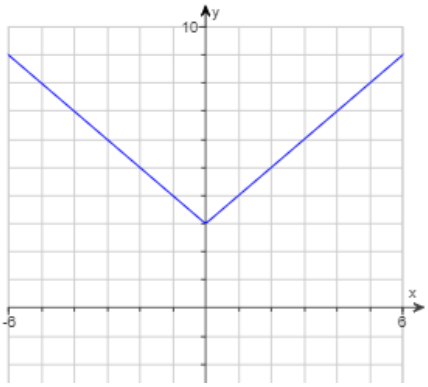
Complete the table of values below.

x	y
−3	6
−1	4
0	3
1	4
3	6

(Simplify your answers.)

|-3| + 3 = 6
|-1| + 3 = 4
|0| + 3 = 3
|1| + 3 = 4
|3| + 3 = 6

transformation is up 3 units



2) Make a table of values for the following equation. Then graph the equation.

$y = |x + 5|$

plug the x value of the table into y = |x+5|

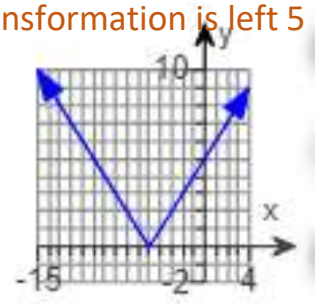
for EVERY x value in the table

Complete the table of values below.

x	y
−3	|−3+5| = 2
−1	|−1+5| = 4
0	|0+5| = 5
1	|1+5| = 6
3	|3+5| = 8

|-3| + 3 = 6

transformation is left 5 units



3) Make a table of values for the following equation. Then graph the equation.

$y = |x + 8|$

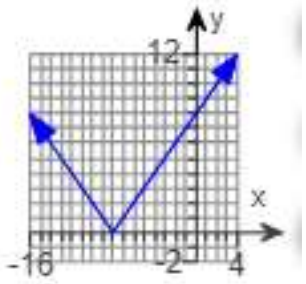
plug the x value of the table into y = |x+9|
for EVERY x value in the table

Complete the table of values below.

transformation is left 8 units

x	y
− 3	$\|-3+8\| = 5$
− 1	$\|-1+8\| = 7$
0	$\|0+8\| = 8$
1	$\|1+8\| = 9$
3	$\|3+8\| = 11$

|-3+8| = 5



4) Make a table of values for the equation. Then graph the equation.

$y = |x + 1| - 2$

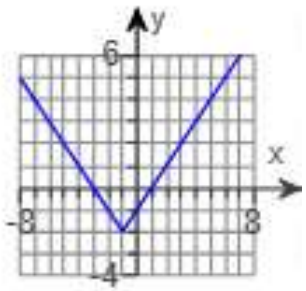
plug the x value of the table into y = |x-1|+3
for EVERY x value in the table

Complete the table of values below.

transformation is left 1, down 3 units

x	y
− 5	2
− 3	0
− 1	− 2
0	− 1
1	0
3	2
5	4

y = |-5+1|- 2 = 4 - 2 = 2



5) Make a table of values for the equation. Then graph the equation.

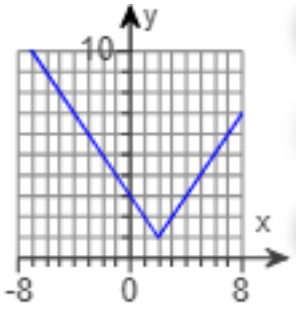
$y = |x - 2| + 1$

plug the x value of the table into y = |x-2|+1
for EVERY x value in the table

x	y
−5	8
−3	6
−1	4
0	3
1	2
3	2
5	4

y = |-5-2|+1 = 7+ 1 = 8

transformation is left 1, down 3 units



6) Make a table of values for the following equation. Then graph the equation.

$y = |x| + 4$

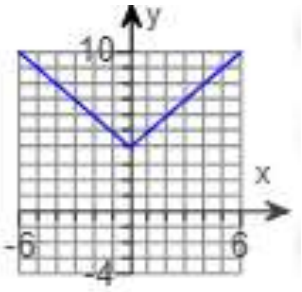
plug the x value of the table into y = |x|+4
for EVERY x value in the table

Complete the table of values below.

x	y
−3	7
−1	5
0	4
1	5
3	7

y = |-3|+4 = 3 + 4 = 7

transformation is up 4



7) Make a table of values for the following equation. Then graph the equation.

$y = |x + 6|$

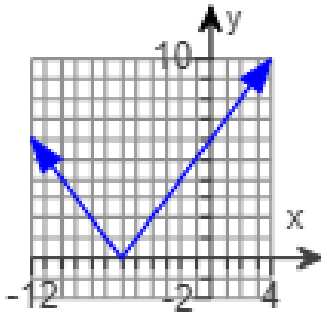
plug the x value of the table into y = |x-2|+1
for EVERY x value in the table

Complete the table of values below.

transformation is left 6

x	y
−3	$\|-3+6\| = 3$
−1	$\|-1+6\| = 5$
0	$\|0+6\| = 6$
1	$\|1+6\| = 7$
3	$\|3+6\| = 9$

y = |-3 + 6| = 3



8) Make a table of values for the following equation. Then graph the equation.

$y = |x + 2|$

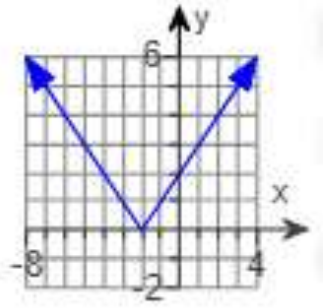
plug the x value of the table into y = |x+2|
for EVERY x value in the table

Complete the table of values below.

transformation is left 2

x	y
−3	$\|-3+2\| = 1$
−1	$\|-1+2\| = 1$
0	$\|0+2\| = 2$
1	$\|1+2\| = 3$
3	$\|3+2\| = 5$

y = |-3 + 3| = 1



9) Make a table of values for the equation. Then graph the equation.

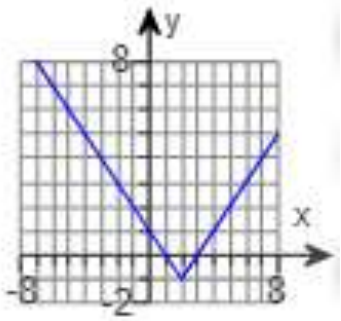
$y = |x - 2| - 1$ plug the x value of the table into y = |x - 2| - 1 for EVERY x value in the table

Complete the table of values below.

transformation is right 2, down 1

x	y
– 5	6
– 3	4
– 1	2
0	1
1	0
3	0
5	2

y = |-5 - 2| - 1 = 7 - 1= 6



10) Make a table of values for the equation. Then graph the equation.

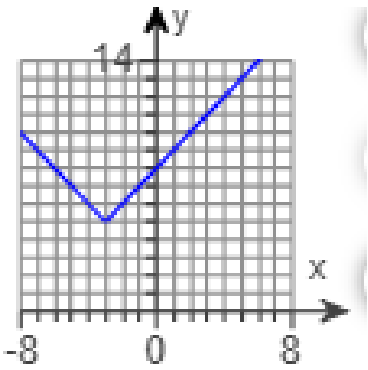
$y = |x + 3| + 5$ plug the x value of the table into y = |x - 2| - 1 for EVERY x value in the table

Complete the table of values below.

transformation is left 3, up 5

x	y
– 5	7
– 3	5
– 1	7
0	8
1	9
3	11
5	13

y = |-5 + 3| + 5 = 2 + 5 = 7

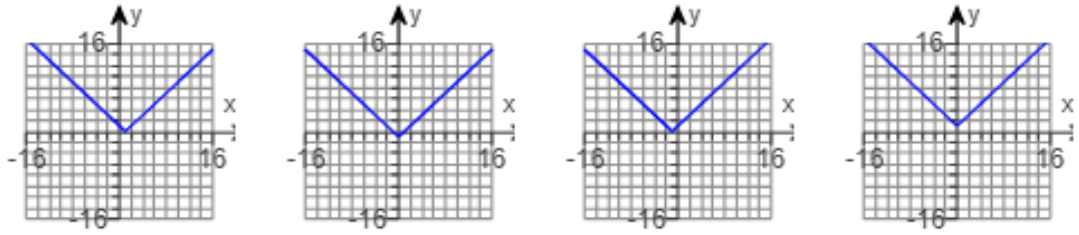


11) Sketch the graph of the function.

$f(x) = |x| + 1$ Shifts up 1

Choose the correct graph below.

A. B. C. D.



12) Sketch the graph of the function.

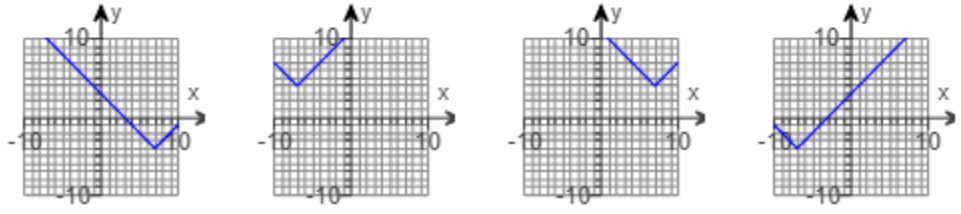
$f(x) = |x + 3|$ Shifts up 1

13) Find the graph of the function.

$g(x) = |x + 7| - 4$ Shifts left 7 and down 4

Choose the correct graph below.

A. B. C. D.

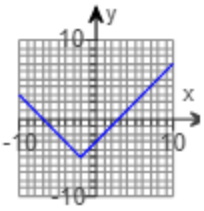
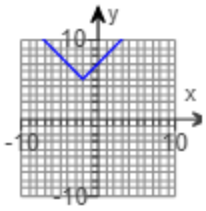
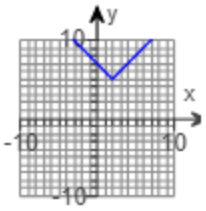
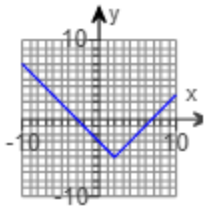


14) Find the graph of the function.

$g(x) = |x + 2| - 5$

Shifts left 2 and down 5

Choose the correct graph below.

A.  B.  C.  D. 

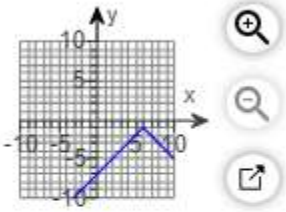
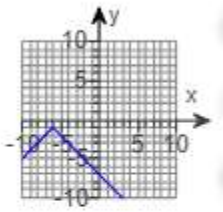
15) Find the graph of the function.

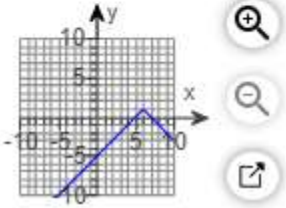
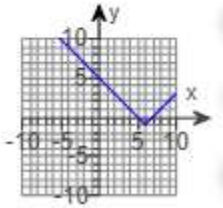
$g(x) = -|x - 6| - 1$

Reflects across the x-axis

Shifts right 2 and down 1

Choose the correct graph below.

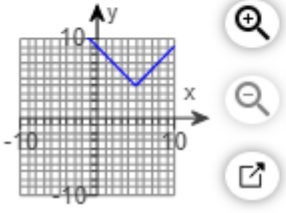
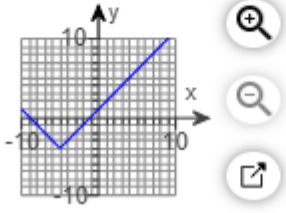
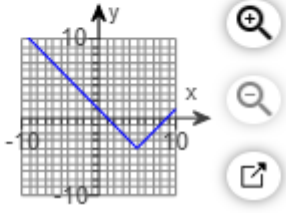
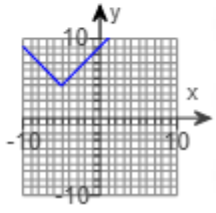
A.  B. 

C.  D. 

16) Find the graph of the function.

$g(x) = |x + 5| - 4$

Choose the correct graph below. Shifts left 5 and down 4

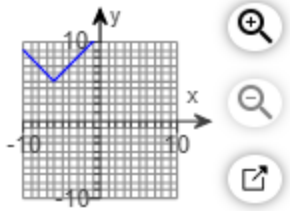
A.  B.  C.  D. 

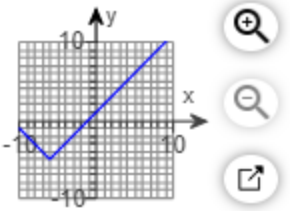
17) Find the graph of the function.

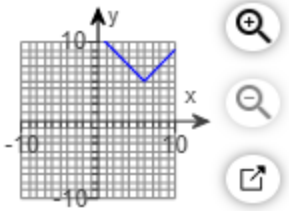
$g(x) = |x + 6| - 5$

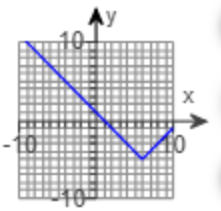
Choose the correct graph below.

Shifts left 6 and down 5

A. 

B. 

C. 

D. 

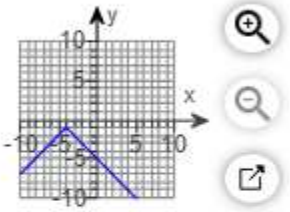
18) Find the graph of the function.

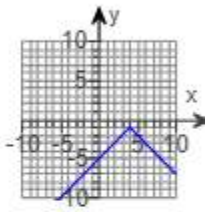
$g(x) = -|x + 4| - 1$

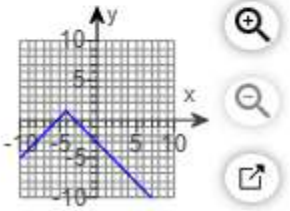
Reflects across the x-axis

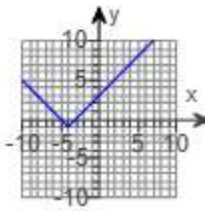
Shifts left 4 and down 1

Choose the correct graph below.

A. 

B. 

C. 

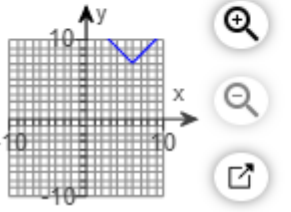
D. 

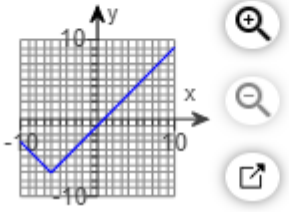
19) Find the graph of the function.

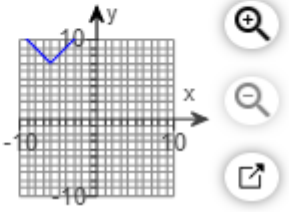
$g(x) = |x + 6| - 7$

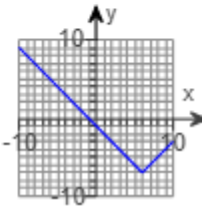
Choose the correct graph below.

Shifts left 6 and down 7

A. 

B. 

C. 

D. 

20) Find the graph of the function.

$g(x) = |x + 5| - 4$

Choose the correct graph below.

Shifts left 5 and down 4

A. B. C. D. ★