Graphing Absolute Value Functions

2-3

Warm Up

Evaluate

- $|-3|=$ 3
- $|-2+5|=$ $|3|=3$
- $|-4-2|=$ $|-6|=6$
- $|-1+6|=$
- $|14-18|=$
- $|1-2|=$

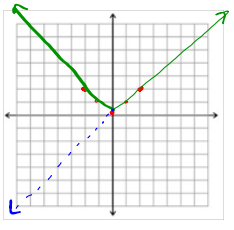
Graphing Absolute Value Task

$f(x)=x$

Complete the table and then graph the coordinate pairs.

$f(x)=|x|$

x	f(x)
-2	$\|-2\|=2$
-1	1
0	0
1	1
2	2



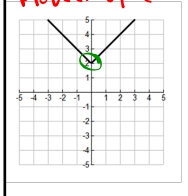
State where the graph is increasing $(0, \infty)$

State where the graph is decreasing $(-\infty, 0)$

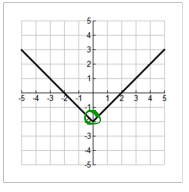
State the Domain of the function $(-\infty, \infty)$

State the Range of the function $[0, \infty)$

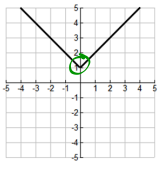
$f(x)=|x|+2$ moved up 2



$f(x)=|x|-2$ went down 2

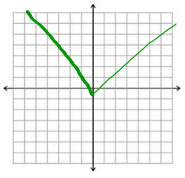


$f(x)=|x|+1$ moved up 1



Discuss with a partner any patterns you may see. Predict what the graph will look like for the following function. Sketch your prediction below.

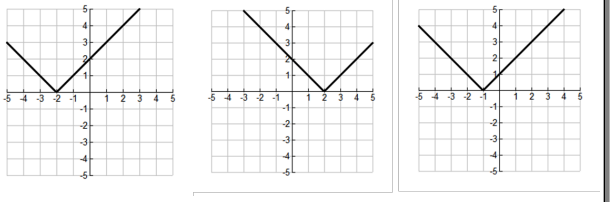
$f(x) = |x| - 1$



Use your graphing calculator to check your prediction.

$f(x) = |x + 2|$ $\quad$ $f(x) = |x - 2|$ $\quad$ $f(x) = |x + 1|$

moved left 2 $\quad$ moved right 2 $\quad$ Left 1

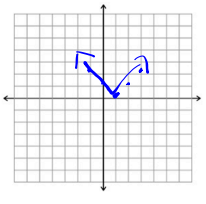


Discuss with a partner any patterns you may have noticed from the examples above. Predict what the graph will look like for the following function. Sketch your prediction on the given graph below.

$f(x) = |x - 1|$

Complete the table and use it to graph the solution and check your answer.

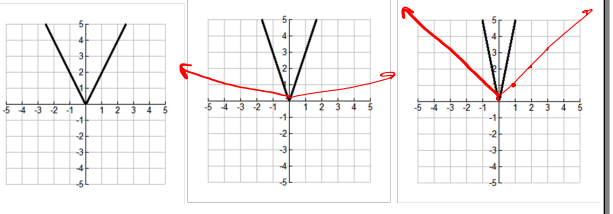
x	f(x)
-2	
-1	
0	
1	
2	



$|x|$

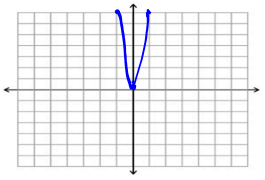
$f(x) = 2|x|$ $\quad$ $f(x) = 3|x|$ $\quad$ $f(x) = 5|x|$

$\frac{1}{5}|x|$ $\quad$ $|x|$



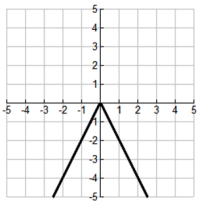
Discuss with a partner any patterns you may have noticed from the examples above. Predict what the graph will look like for the following function. Sketch your prediction on the given graph below.

$$f(x) = 7|x|$$

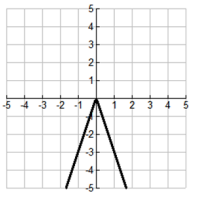


Use a graphing calculator to check your solution

$f(x) = -2|x|$

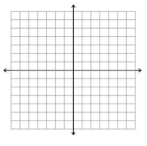


$f(x) = -3|x|$



Discuss with a partner any patterns you many have noticed from the examples above. Predict what the graph will look like for the following function.

$$f(x) = -5|x|$$

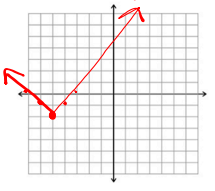


Complete the table and use it to graph the solution and check your answer.

x	f(x)
-2	
-1	
0	
1	
2	

Use the information you have gathered from all of the examples and predict and sketch the following function. Check your answer with your calculator.

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



$f(x) = |x-3|+2$