

# Algebra 1

Chapter 5

Section 5-8

May 13-10:02 PM

## Parent Function

A parent function is the simplest form of a type of function.

## Translation

A translation shifts an entire graph horizontally, vertically or both.

Nov 4-1:12 PM

## Review

$$y = |x|$$

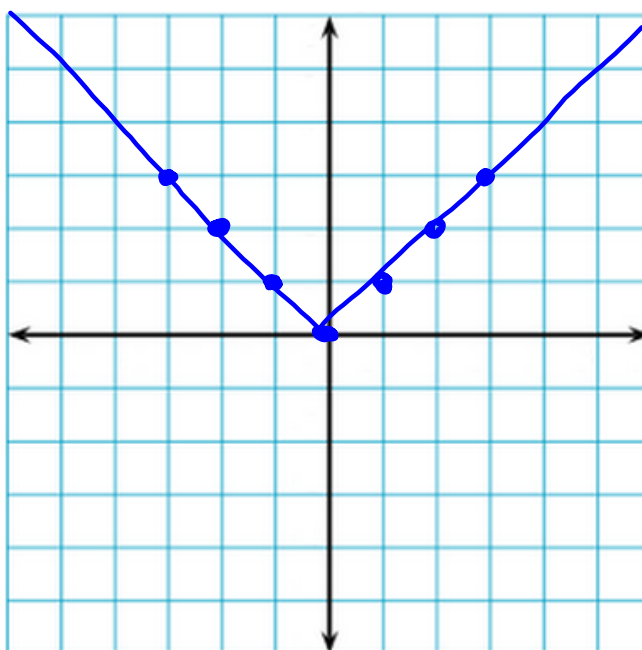
- When  $x = 11$ ,  $y = ?$   $||$
- When  $x = -2.5$ ,  $y = ?$   $2.5$
- when  $x = 0$ ,  $y = ?$   $0$
- when  $x = -11$ ,  $y = ?$   $||$

Dec 5-7:55 AM

## Graphing absolute value

$$y = |x|$$

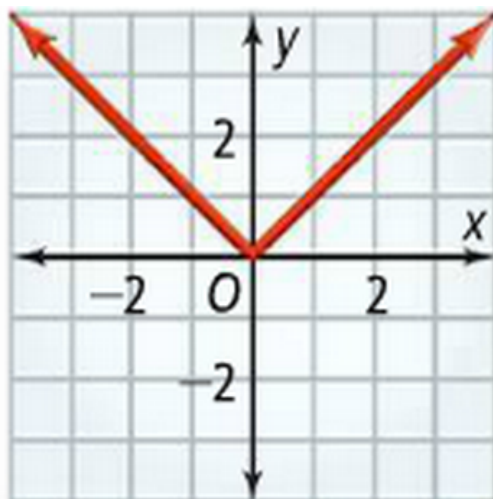
x	y
-3	3
-2	2
-1	1
0	0
1	1
2	2
3	3



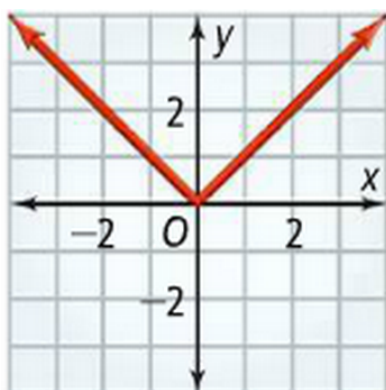
Dec 5-8:12 AM

$y = |x|$  is a parent function.

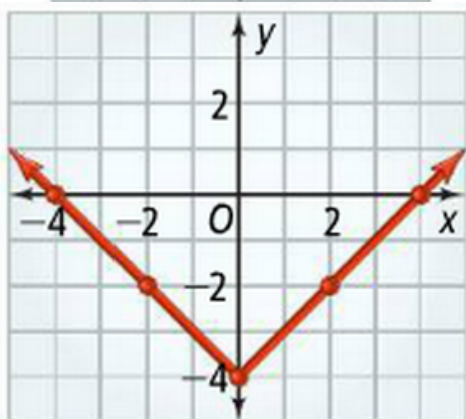
We can translate the function using addition and subtraction



Dec 5-8:13 AM



Shift the function  $y = |x|$  down four units.



What would the equation become?

$$y = |x| - 4$$

Dec 5-8:13 AM

## Translation Rules

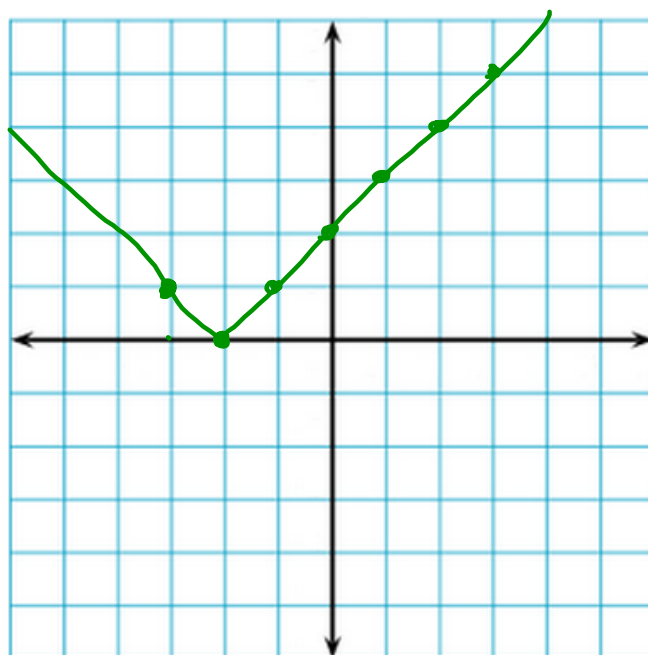
- An addition to the entire parent function shifts the graph up
- A Subtraction from the entire parent function shifts the graph down

Dec 5-8:29 AM

## Graph the function

$$y = |x + 2|$$

x	y
-3	1
-2	0
-1	1
0	2
1	3



Dec 5-8:12 AM

## Translation Rules

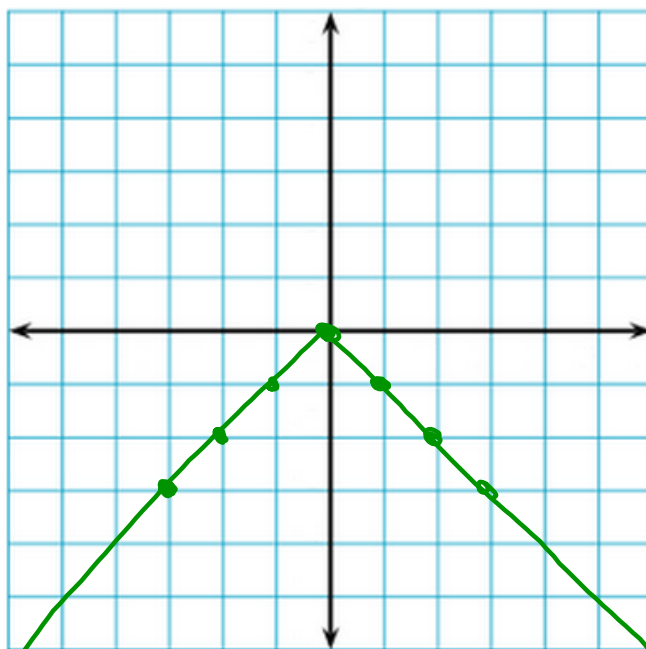
- An addition to the entire parent function shift the graph up
- A subtraction from the entire parent function shifts the graph down
- An addition to "x" only shifts the graph left
- A subtraction from "x" only shifts the graph right

Dec 5-8:29 AM

## Graph the function

$$y = -|x|$$

x	y
-3	3
-2	2
-1	1
0	0
1	-1
2	-2
3	-3



Dec 5-8:12 AM

## Translation Rules

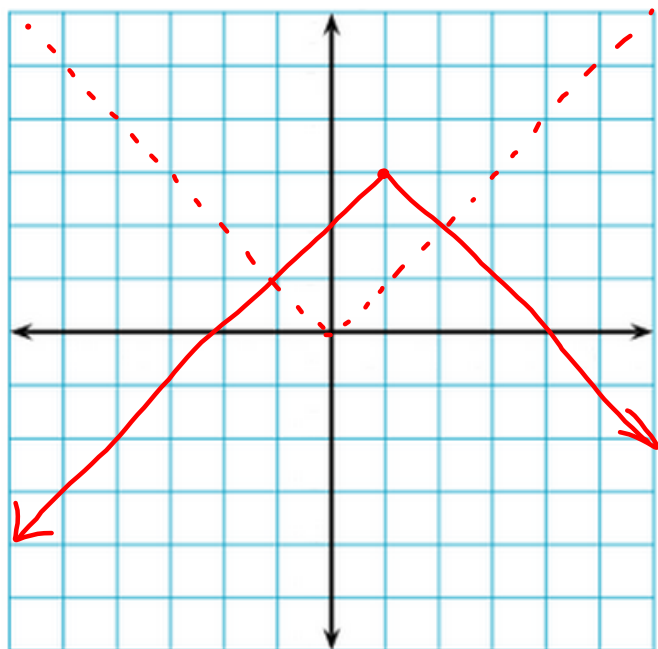
- An addition to the entire parent function shift the graph up
- A subtraction from the entire parent function shifts the graph down
- An addition to "x" only shifts the graph left
- A subtraction from "x" only shifts the graph right
- Making the whole parent function negative flips the graph upside down (*reflects across x-axis*)

Dec 5-8:29 AM

## Graph the function

$$y = -|x - 1| + 3$$

upside down  
up 3  
right 1

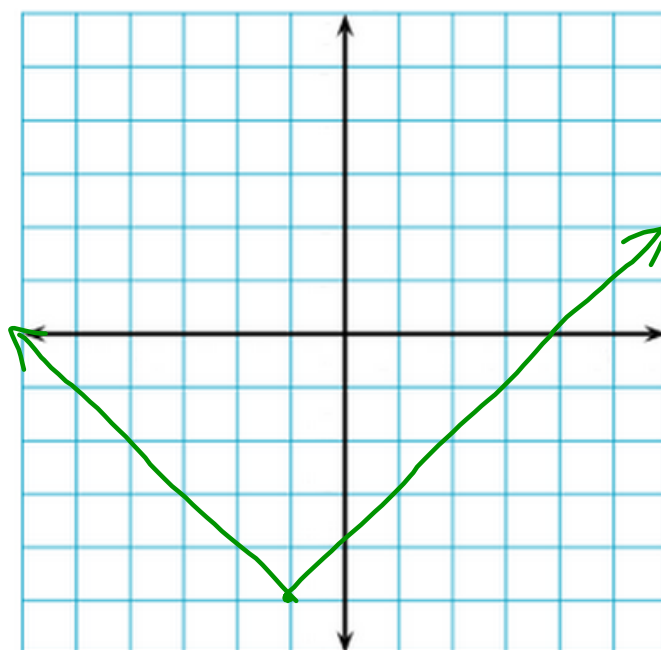


Dec 5-8:12 AM

Graph the function

$$y = |x + 1| - 5$$

left + 1  
down 5

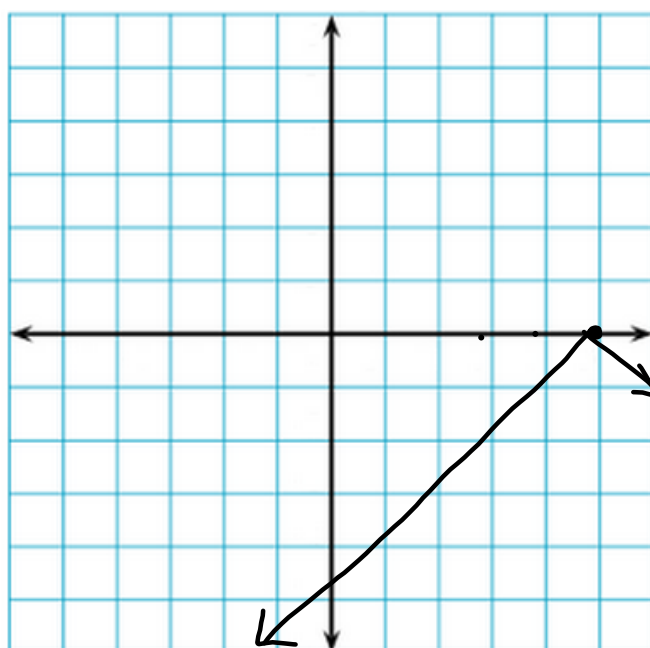


Dec 5-8:12 AM

Graph the function

$$y = -|x - 5|$$

Upside down  
right + 5

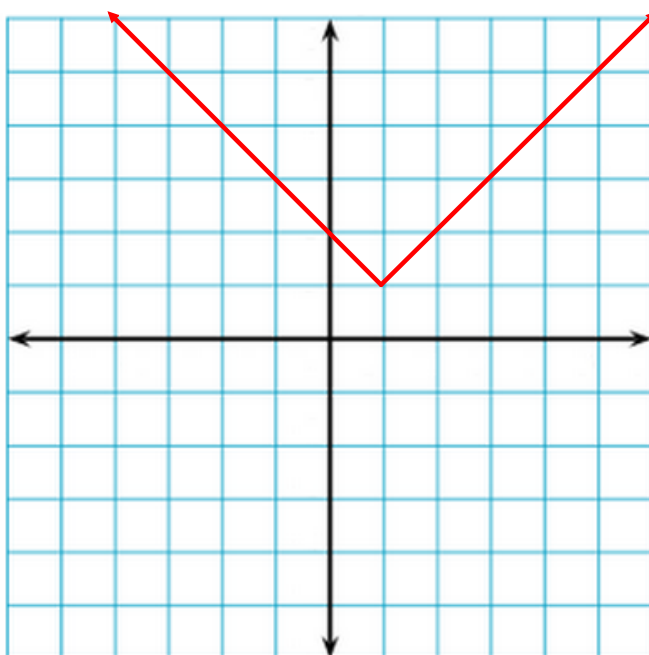


Dec 5-8:12 AM

## Graph the function

What is the equation of the graph?

Parent:  $y = |x|$   
 $y = |x-1| + 1$

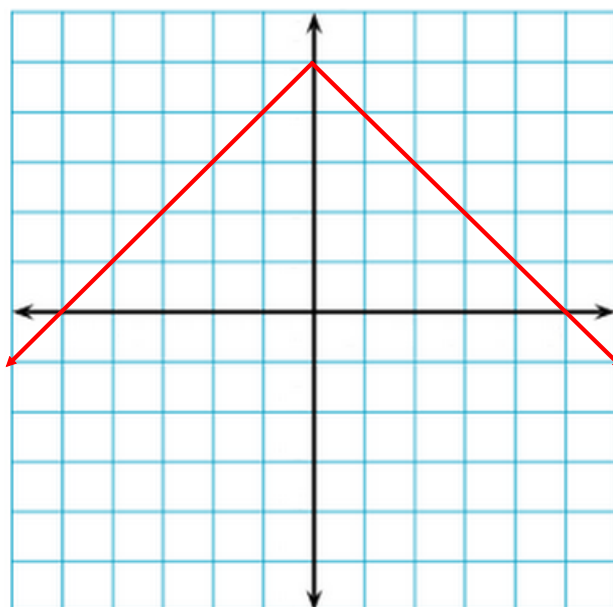


Dec 5-8:12 AM

## Graph the function

What is the equation of the graph?

$$y = -|x| + 5$$



Dec 5-8:12 AM