

Graphing Absolute Value Equations

Let's Review! Absolute Value is the distance from zero, so the output is always positive.

For #1-4, evaluate the absolute value expressions.

1. $|-2 - 3|$

$|-5|$
 (5)

2. $|-4| + 1$

$4 + 1$
 (5)

3. $|4 - 10|$

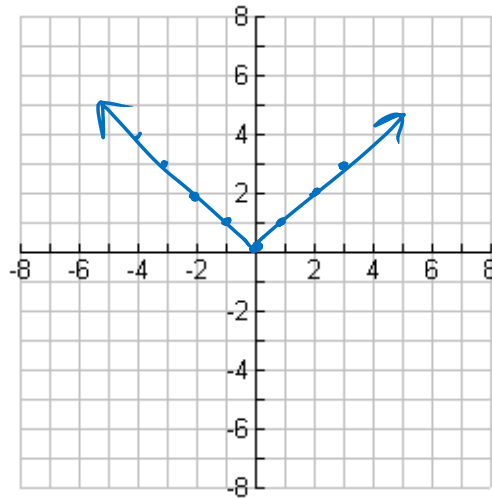
$| -6 |$
 (6)

4. $2 - |-10|$

$2 - 10$
 (-8)

Let's explore the absolute value "parent" function: $y = |x|$

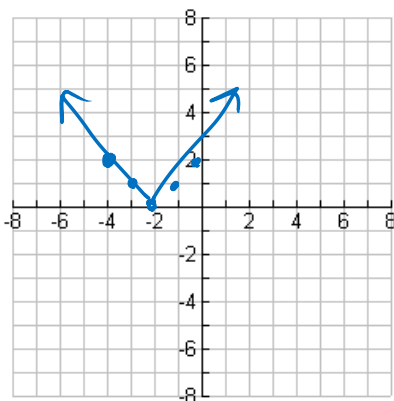
x	y
-2	2
-1	1
0	0
1	1
2	2



Let's try graphing absolute value equations!

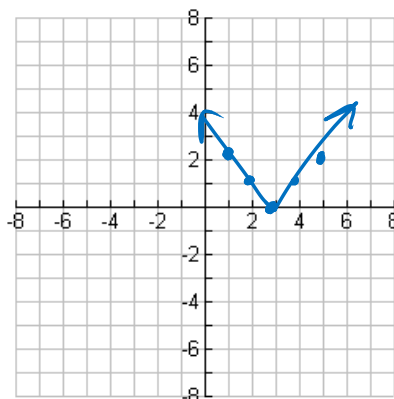
1. $y = |x + 2|$

x	y
-4	2
-3	1
-2	0
-1	1
0	2



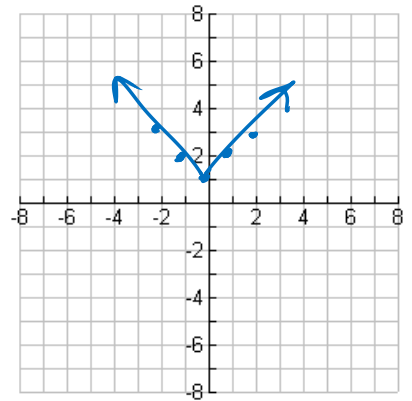
2. $y = |x - 3|$

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



3. $y = |x| + 1$

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



**Compare and contrast the three graphs with the parent function. What do you notice?*

Can you *predict* what the following graphs will look like?

4. $y = |x - 5|$

→ 5

5. $y = |x| - 2$

↓ 2

6. $y = |x + 3|$

← 3



Big Idea: HORIZONTAL/VERTICAL Shifts

The absolute value graph shifts Left or Right when you add or subtract **INSIDE** the absolute value bars.

The absolute value graph shifts UP or DOWN when you add or subtract **OUTSIDE** the absolute value bars.

Let's Practice! Given the absolute value equation, determine where the parent function shifts (up, down, left or right).

1. $y = |x - 3|$

Right 3

2. $y = |x| - 5$

Down 5

3. $y = |x + 6|$

Left 6

4. $y = |x| + 7$

up 7

5. $y = |4 + x|$

Left 4

6. $y = 2 + |x|$

up 2

woohooo!! Give your partner a high five!!!