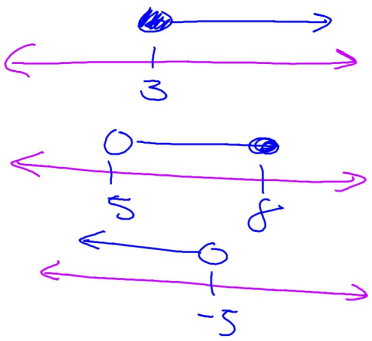
Graph of an Inequality



Inequality Notation

$x \geq 3$

$5 < x \leq 8$

$x < -5$

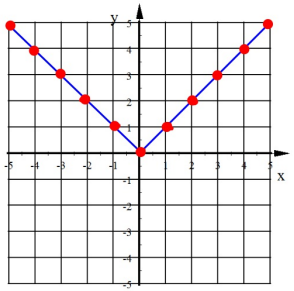
Interval Notation

$[3, \infty)$

$(5, 8]$

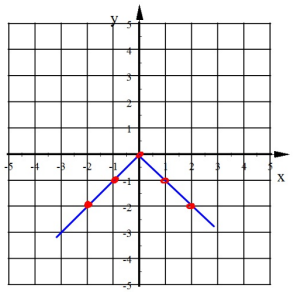
$(-\infty, -5)$

Parent Absolute Value Function $y=|x|$ Graph is a V-shape



Characteristics of the Parent Function:

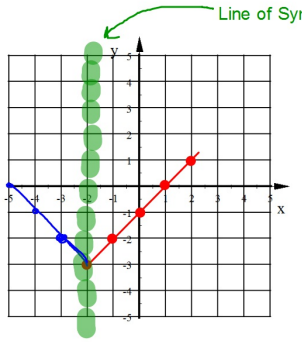
- Opens up
- Vertex at (0,0)
- Sides have slope of 1 and -1



Graph of y = -|x|

Upside Down V

it's y=|x| reflected over the x-axis.



Line of Symmetry: Vertical Line through the Vertex

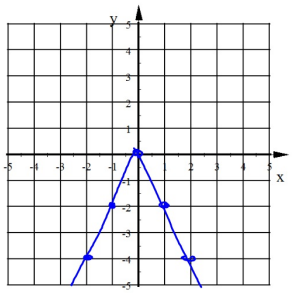
Graph $y = |x+2| - 3$

Graph should be a V that opens up.

Vertex is (-2, -3)

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

Graph y = -2|x|



Upside down

sides have a slope of 2 and -2

Twice as tall as Parent Function

Vertical Stretch Factor of 2

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

Graph of y = a|x - h| + k

a:
- Vertical stretch or shrink factor (slope of sides).
- If a<0, x-axis reflection (upside down)

h:
- Horizontal translation
- x-h h units right
- x+h h units left

k:
- Vertical translation
- +k k units up
- -k k units down

Describe the transformations of the Parent Function y=|x| this equation represents:

$y = -6|x + 7| - 10$

opens down

6x Taller

7 Left

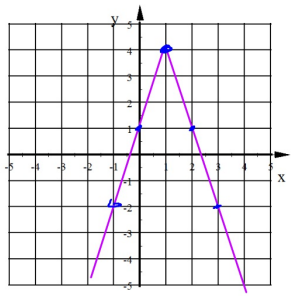
10 down

Write the equation of the parent function y=|x| after the following transformations:

- Vertical shrink to one-fourth the height
- Translate 13 units right
- Translate 2 units up
- Opens Up.

STAYS POS

$y = .25|x - 13| + 2$



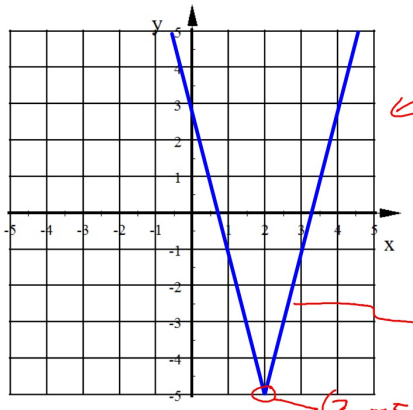
Graph y = -3|x-1| + 4

opens down

3x taller

1 RT

4 up



Write the equation of this graph.

opens up

$y = 4|x - 2| - 5$

sides have a slope of $\pm 4 \rightarrow$ 4 x taller

(2, -5) → 2 RT, 5 down