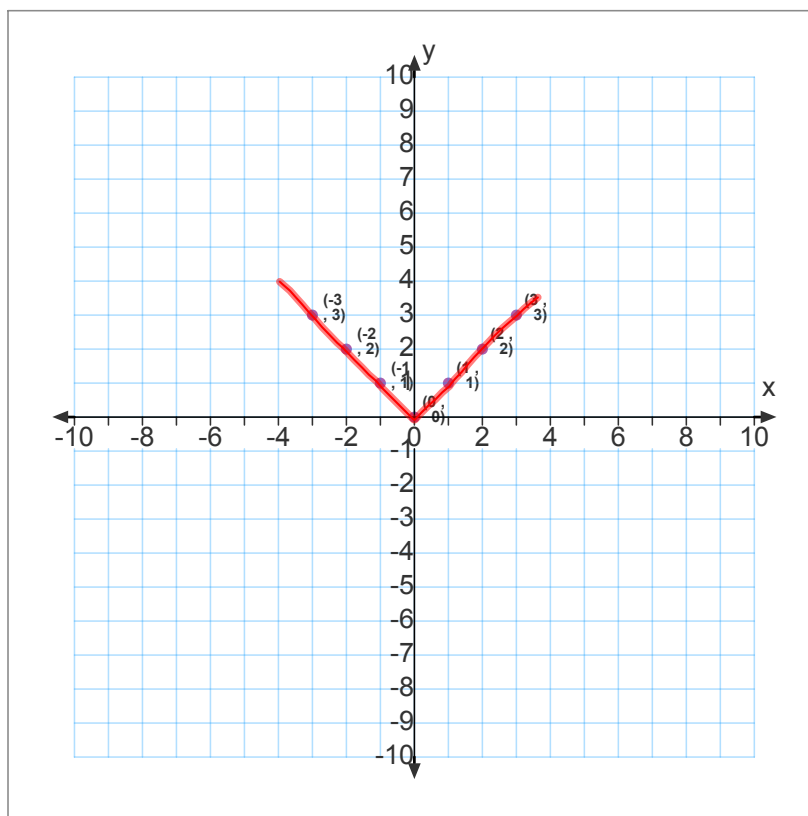


$$y = |x|$$

X	Y
-3	3
-2	2
-1	1
0	0
1	1
2	2
3	3



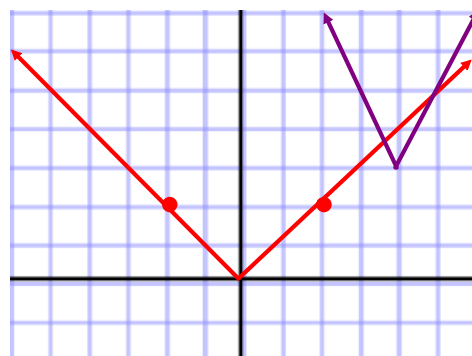
Graphing Absolute Value Functions

$$y = |x|$$

The graph of $y = a|x - h| + k$ has the following characteristics:

- The graph has **vertex** (h, k) and is symmetric in the line $x = h$.
- The graph is V-shaped. It opens up if $a > 0$ and down if $a < 0$.
- The graph is **wider** than the graph of $y = |x|$ if $|a| < 1$.

The graph is **narrower** than the graph of $y = |x|$ if $|a| > 1$.



$$y = |x|$$

$$y = 2|x - 4| + 3$$

To graph an absolute value function you may find it helpful to plot the vertex and one other point. Use symmetry to plot a third point and then complete the graph.

Graphing Absolute Value Functions

The graph of $y = a|x - h| + k$ has the following characteristics:

- The graph has vertex (h, k) and is symmetric in the line $x = h$.
- The graph is V-shaped. It opens up if $a > 0$ and down if $a < 0$.
- The graph is wider than the graph of $y = |x|$ if $|a| < 1$.
The graph is narrower than the graph of $y = |x|$ if $|a| > 1$.

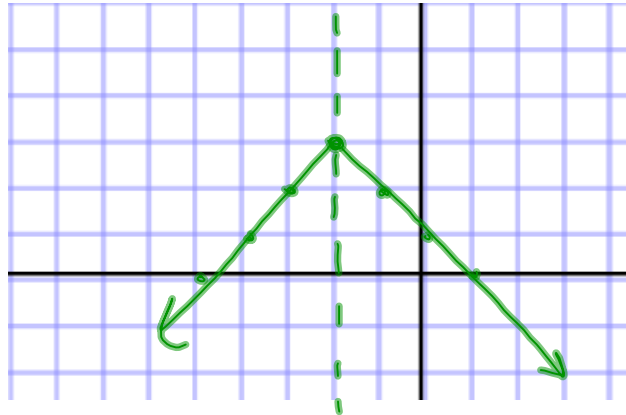
$$\text{Graph } y = -|x + 2| + 3$$

$$a = -1 \text{ "slope"}$$

$$h = -2$$

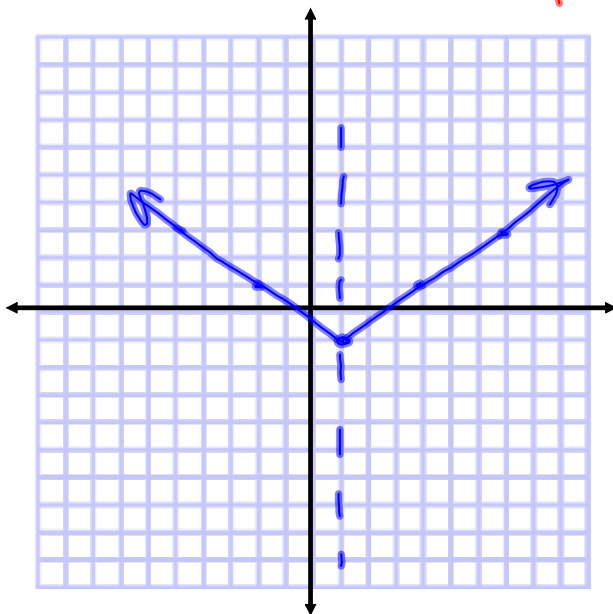
$$k = 3$$

$$\text{vertex } (-2, 3)$$



$$y = \frac{2}{3}|x - 1| - 1$$

$$\text{vertex } (1, -1)$$



Graphing Absolute Value Functions

The graph of $y = a|x - h| + k$ has the following characteristics:

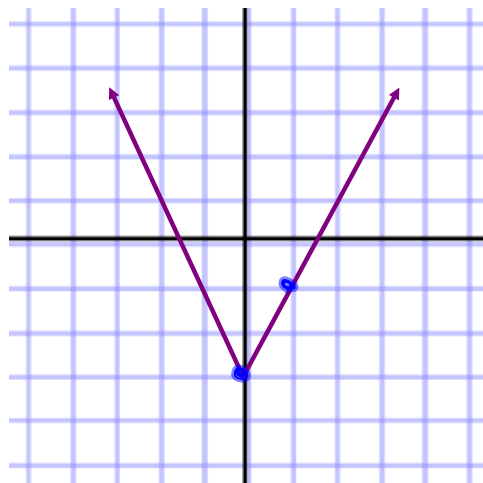
- The graph has vertex (h, k) and is symmetric in the line $x = h$.
- The graph is V-shaped. It opens up if $a > 0$ and down if $a < 0$.
- The graph is wider than the graph of $y = |x|$ if $|a| < 1$.

The graph is narrower than the graph of $y = |x|$ if $|a| > 1$.

Write an equation of the graph shown.

vertex $(0, -3)$
h, k
a = "slope" = +2

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



Assignment

p.126

12-24 even

Quiz (2.5-2.8) Tomorrow.