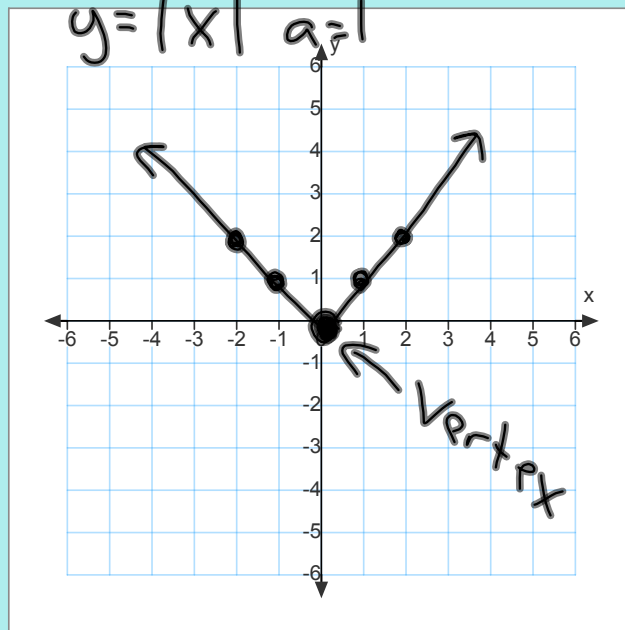


Graph this piecewise function... It's magical!

$$f(x) = \begin{cases} -x, & x < 0 \\ x, & x \geq 0 \end{cases}$$



x	-x	x
-2	2	X
-1	1	X
0	0	0
1	1	X
2	2	X



What type of function are we graphing?

Absolute Value Function!

Parent function: $y = |x|$

Domain: Distance from 0
 $(-\infty, \infty)$

Range: $[0, \infty)$

End Behavior:

As $x \rightarrow +\infty$, $f(x) \rightarrow +\infty$

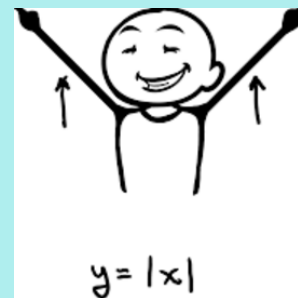
As $x \rightarrow -\infty$, $f(x) \rightarrow +\infty$

Standard form of an absolute value function:

$$y = a|x - h| + k$$

Vertex: (h, k)

$a = \text{slope}$



Time to Try Some

Identify the vertex, domain, range and describe the transformations of $y = |x|$. Then, graph the function.

a) $y = 2|x+1|$

$$y = a|x-h|+k$$

b) $y = -|x-3|+2$

Vertex: $(-1, 0)$

Vertex: $(3, 2)$

$$a = 2$$

$$a = -1$$

Domain: $(-\infty, \infty)$ →

Range: $[0, \infty)$

Range: $(-\infty, 2]$

