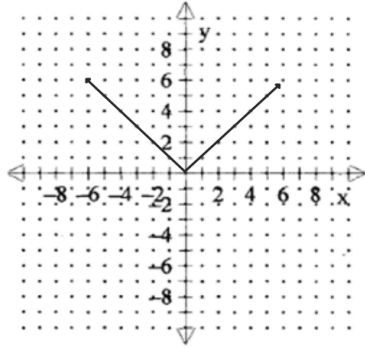


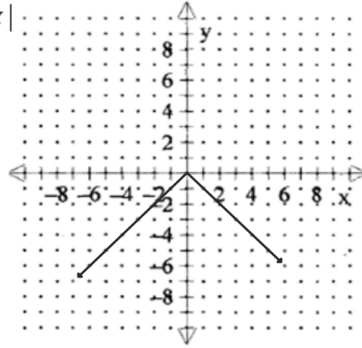
2.8 GRAPHING ABSOLUTE VALUES IN THE COORDINATE PLANE

The graph of an absolute value $y = |x|$ is the union of 2 piecewise functions, $y = x$ and $y = -x$. The range of $y = |x|$ must be considered when graphing the rays.

$$y = |x|$$

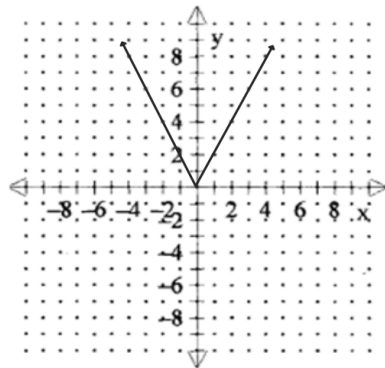


$$y = -|x|$$

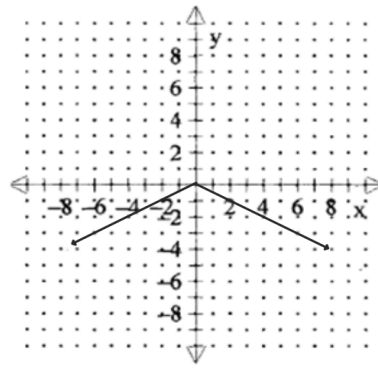


Graphs of other absolute value functions

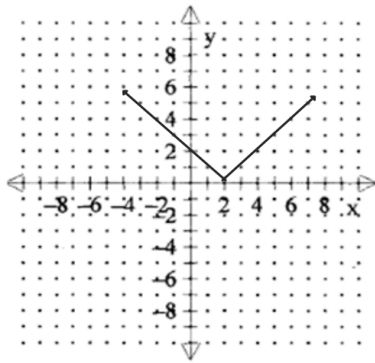
$$y = 2|x|$$



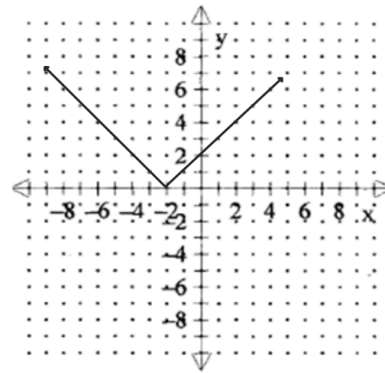
$$y = \frac{-1}{2}|x|$$



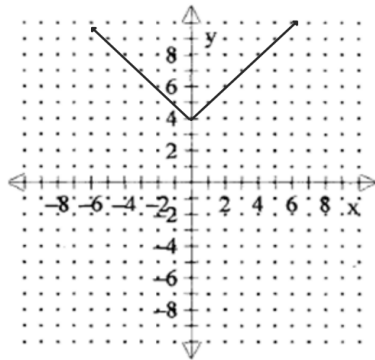
$$y = |x-2|$$



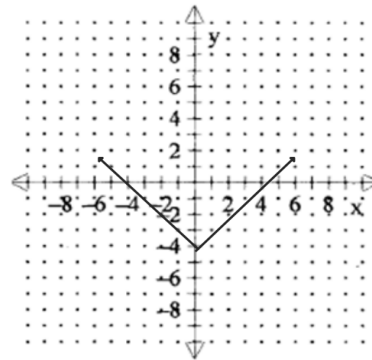
$$y = |x+2|$$



$$y = |x| + 4$$

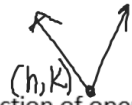


$$y = |x| - 4$$



General Form: $y = a|x-h| + k$

vertex: (h, k)



a determines direction of opening and $|a|$ determines the width

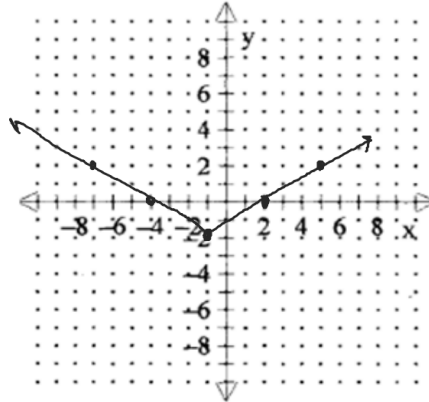
$a > 0$ $a < 0$ as $|a|$ increases, graph gets narrower

a is the slope of the ray that rises to the right from the vertex

$-a$ is the slope of the ray that rises to the left from the vertex

Ex. 1 graph $y = \frac{2}{3}|x-(-1)| - 2$

vertex $(-1, -2)$



Ex. 2 graph $y = -3|x-2| + 4$

vertex $(2, 4)$

