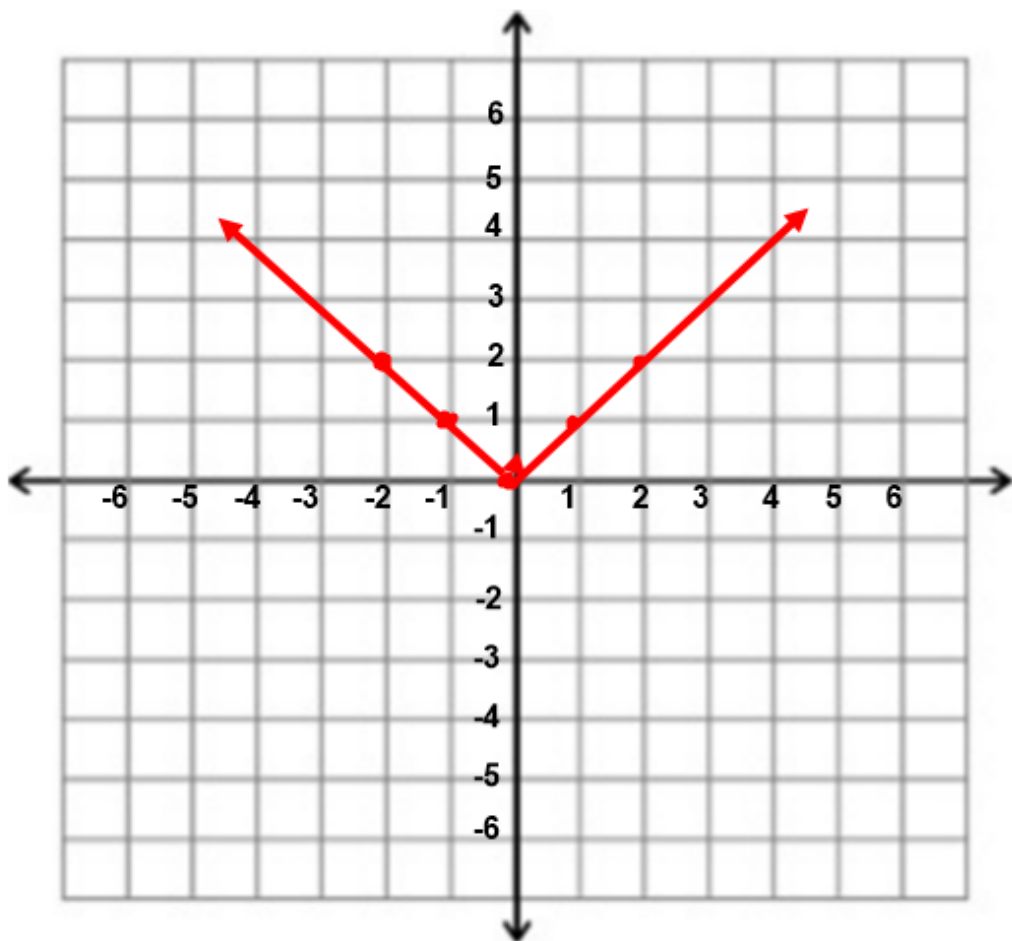# Lesson 2.7: Graphing Absolute Value Functions

$$y = |x| \quad +1$$

opposite
direction ← horizontal
shift.

$$y = \boxed{a}|x - h| + k$$

Vertical
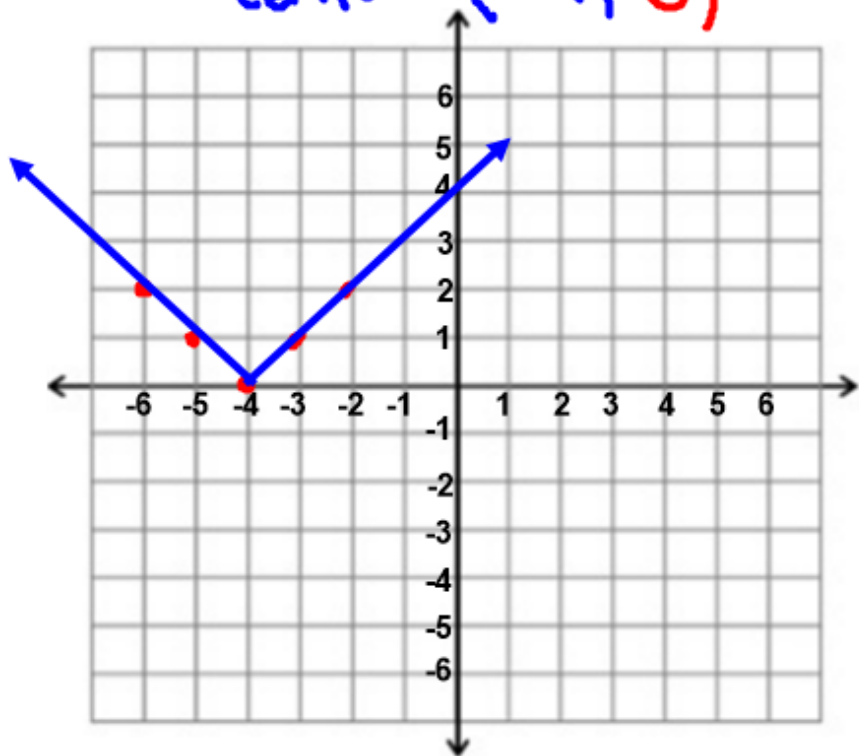Stretch

vertical
shift

Center: (h, k)

x	y
-2	$|-2| = 2$
-1	$|-1| = 1$
0	$|0| = 0$
1	$|1| = 1$
2	$|2| = 2$

Graph

$$y = a|x-h| + k$$
$$(h, k)$$

$$y = 1|x + 4| + 0$$
opp.

Center: $(-4, 0)$

$$y = 1|x - 1| + 3$$
opp. → sign stays same
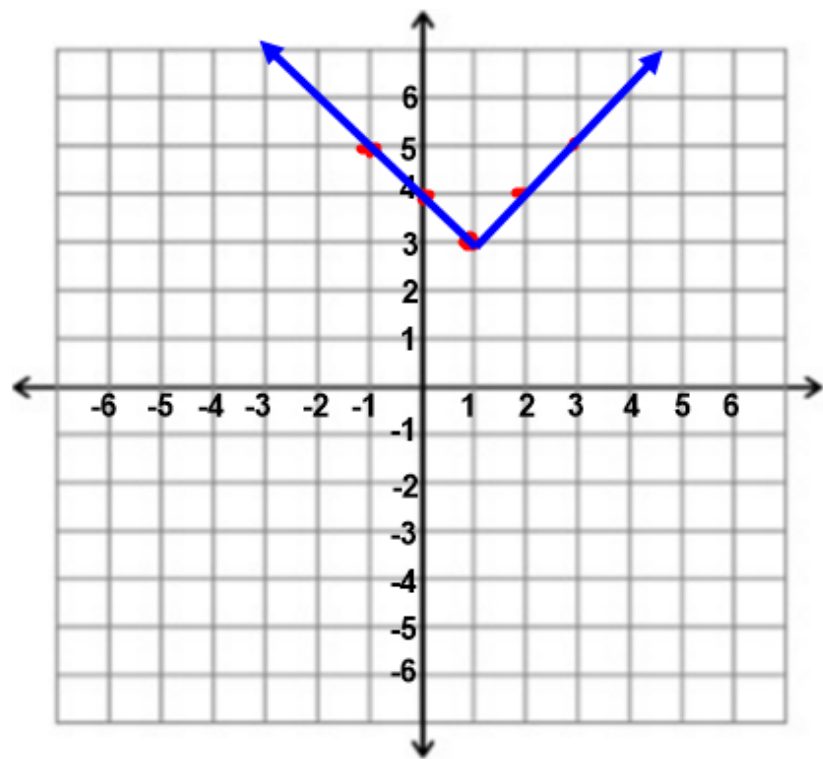
Center: $(+1, 3)$

Graph

up 3 right 1

$y = 3|x| + 1$

(0, 1)

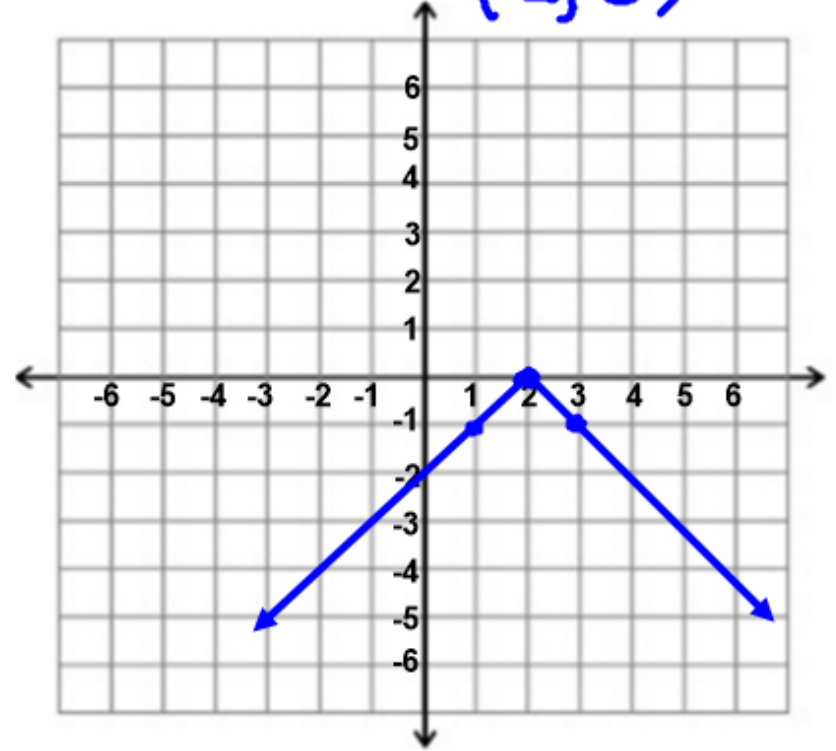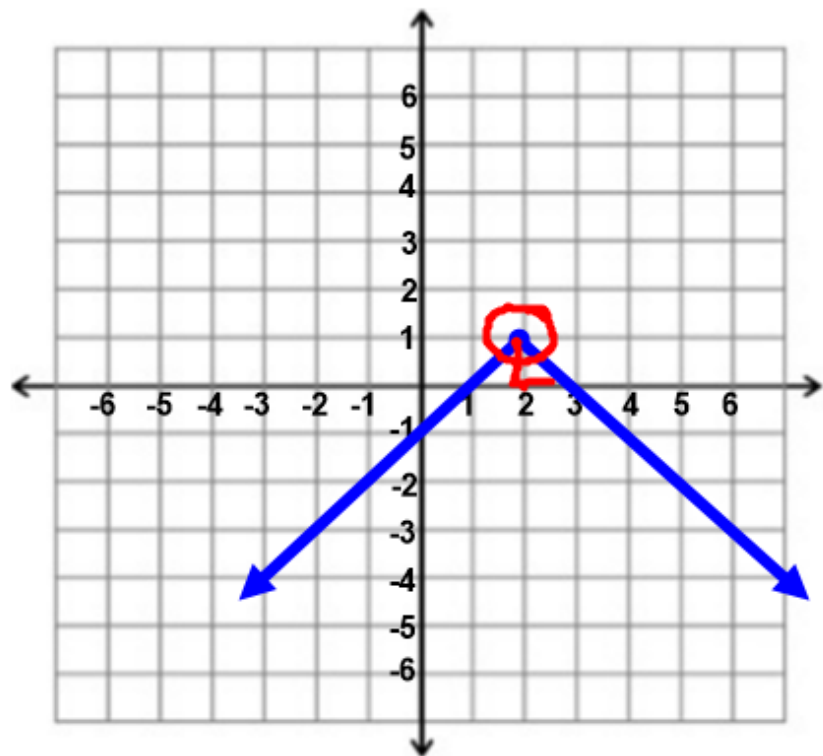↓1, R 1

$y = -|x - 2|$

(2, 0)
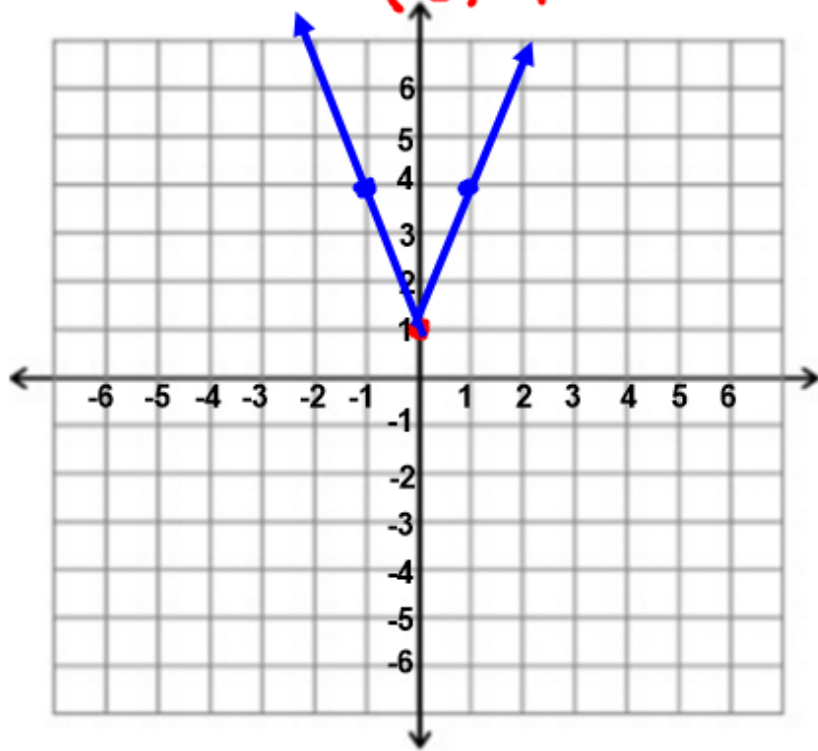
Write the equation based on the graph.

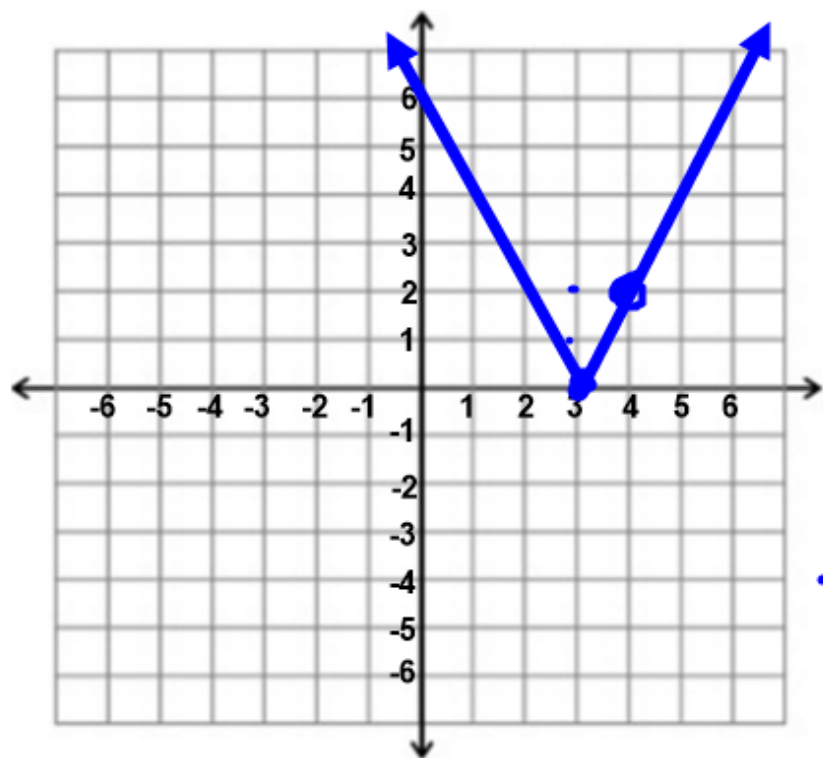$y = a|x - h| + k$

Center: $(2, 1)$
        h, k

$y = -1|x - 2| + 1$

$\downarrow 1 \; R1 \Rightarrow \dfrac{-1}{1} = -1$

Write the equation based on the graph.

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

Center: $(3, 0)$
$ h K$

$$\boxed{y = 2|x - 3|}$$

$$\frac{2}{1} = 2$$

Write the equation based on the graph.