

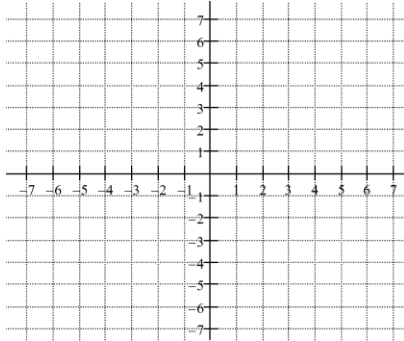
Unit 2: Solving Equations and Inequalities

Lesson 5: Graphing Absolute Value

VOCAB:

Absolute value:

What does the parent graph of $y = |x|$ look like?



Graphing Absolute Value

Standard form of absolute value

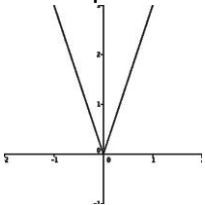
$$y = a|x - h| + k$$

1. The **h** is the horizontal shift (opposite)
2. The **k** is the vertical shift (so the vertex is (h,k))
3. The **a** is the slope and direction of opening

Examples:

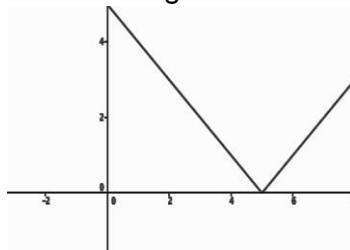
$$f(x) = 3|x|$$

The slope of each leg of the v is 3.



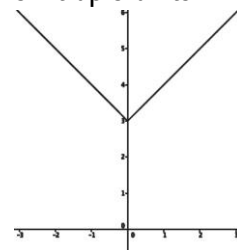
$$f(x) = |x - 5|$$

Shift to the right 5 units.



$$f(x) = |x| + 3$$

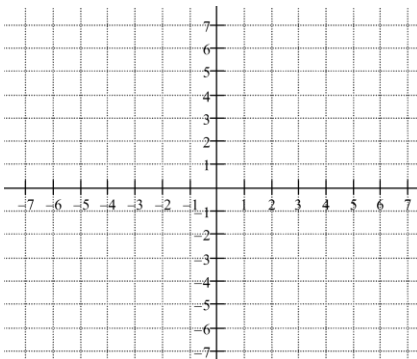
Shift up 3 units



PRACTICE: Graph by first starting with the parent graph

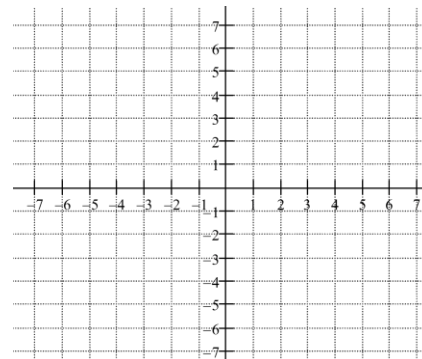
1. $y = |x + 2|$

Vertex:



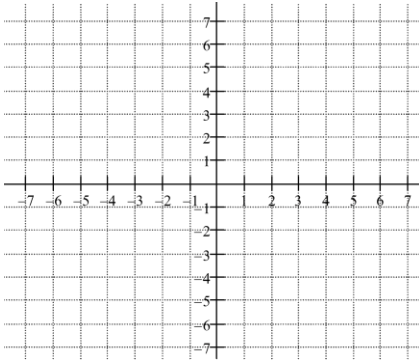
2. $y = |x| - 3$

Vertex:



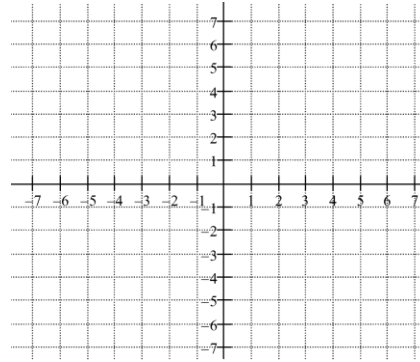
3. $y = -|x - 3|$

Vertex:



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

Vertex:



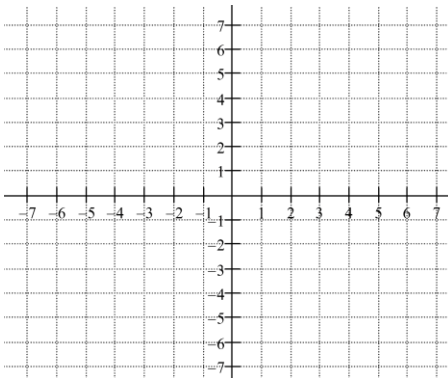
When solving an absolute value by graphing; first, graph two different equations and then look for where the two lines _____ . The solution is where the two graphs meet.

1. $3 = |x + 1|$

Equation 1:

Equation 2:

Vertex:

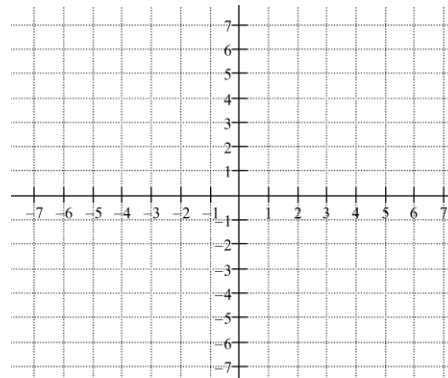


2. $-2 = |x - 2| - 3$

Equation 1:

Equation 2:

Vertex:



Solution:

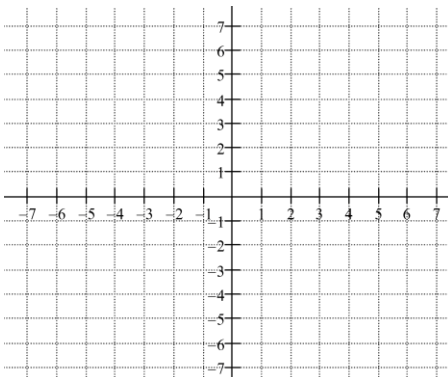
Solution:

3. $-3 = -|x + 4| - 1$

Equation 1:

Equation 2:

Vertex:

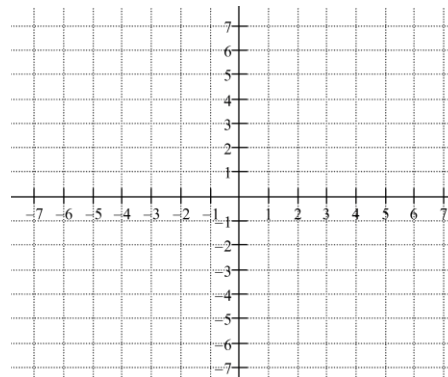


4. $4 = |x - 3| + 4$

Equation 1:

Equation 2:

Vertex:



Solution:

Solution: