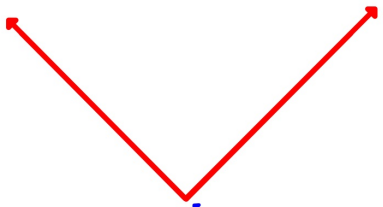
## Sec 6-7: Graphing Absolute Value Equations

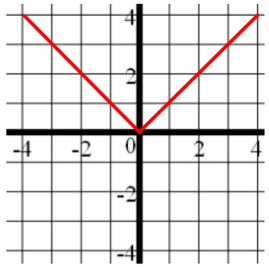
Parent Function: $y = |x|$ "V-shape"



This point is called the "vertex"

**Graphs of the absolute value function:**

The parent function: $y = |x|$




- Vertex (0,0)
- Slope of the two sides: $m = \pm 1$

1. Graph

| Column A | Column B |
|---|---|
| $y = \|x\| + 3$ | $y = \|x\| - 4$ |

What is the vertex of each graph?

$y = |x| + 3$ *Vertex :* (0, 3)

$y = |x| - 4$ *Vertex :* (0, -4)

How is the vertex related to what you see in the equation?

The y-coordinate of the vertex comes from the constant being added or subtracted outside the absolute value (the sign remains the same).

2. Graph

| Column A | Column B |
|---|---|
| $y = \|x - 2\|$ | $y = \|x + 3\|$ |

What is the vertex of each graph?

$y = |x - 2|$ *Vertex :* (2, 0)

$y = |x + 3|$ *Vertex :* (-3, 0)

How is the vertex related to what you see in the equation?

The x-coordinate of the vertex comes from the opposite of the constant inside the absolute value symbols.

3. Graph

| Column A | Column B |
|---|---|
| $y = \|x+3\| - 5$ | $y = \|x-2\| + 2$ |

What is the vertex of each graph?

$y = |x+3| - 5$ *Vertex :* $(-3, -5)$ $y = |x-2| + 2$ *Vertex :* $(2, 2)$

How is the vertex related to what you see in the equation?

The x-coordinate of the vertex comes from the opposite of the constant inside the absolute value symbols. The y-coordinate of the vertex comes from the constant being added or subtracted outside the absolute value (the sign remains the same).

4. Without graphing state the vertex of each absolute value function.

a) $y = |x-8| - 14$ *Vertex :* $(8, -14)$

b) $y = |x+11| - 9$ *Vertex :* $(-11, -9)$