

## 6.8 - Absolute Value Graphs

– Vocabulary:

Absolute Value Function

Translation

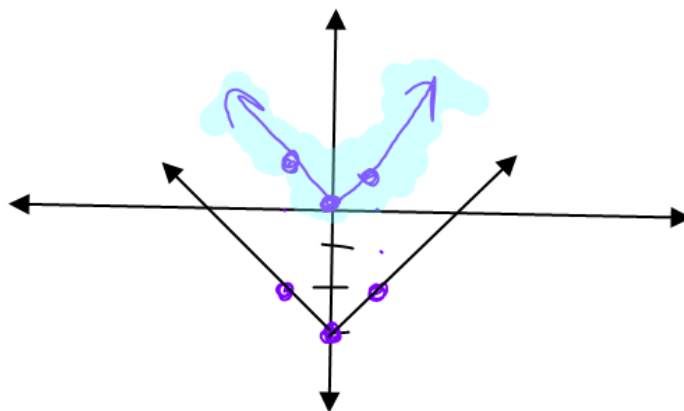
–

↓  
Slide

"Parent function"

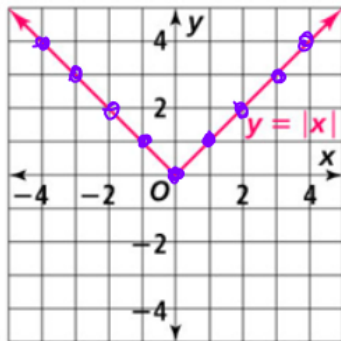
$$y = |x|$$

"V" shaped graph

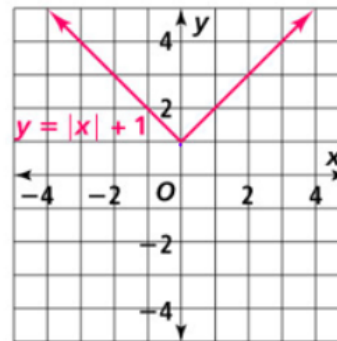


**1 EXAMPLE** Describe how the graphs of  $y = |x|$  and  $y = |x| + 1$  are the same and how they are different.

$$y = |x|$$



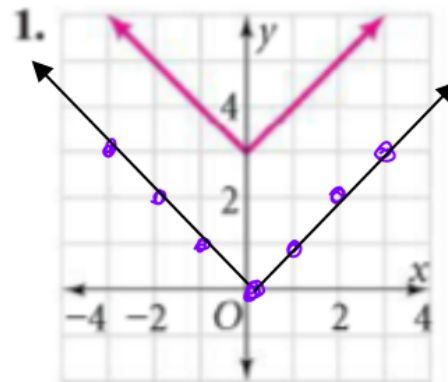
$$y = |x| + 1$$



Same: slope & "V"

different: y value is +1

How is the following graph different than the parent function?



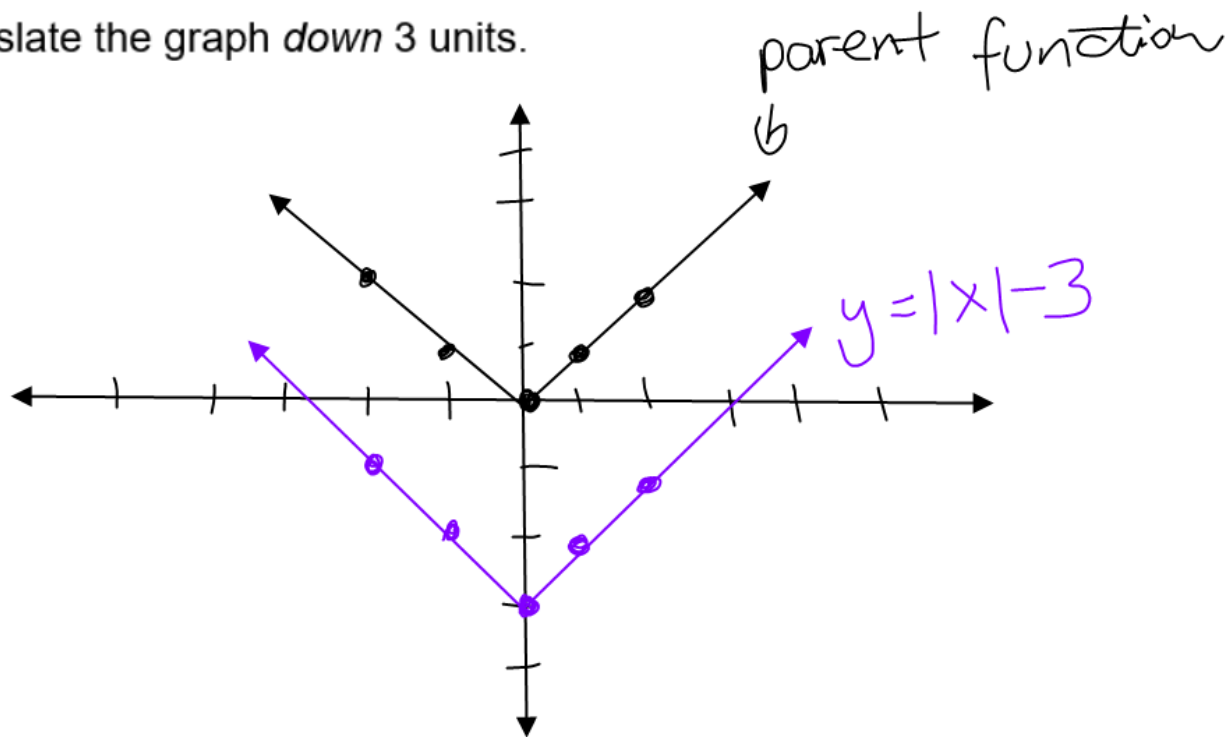
$$y = |x| + 3$$

different: y value is +3

**2 EXAMPLE** Graph  $y = |x| - 3$  by translating  $y = |x|$ .

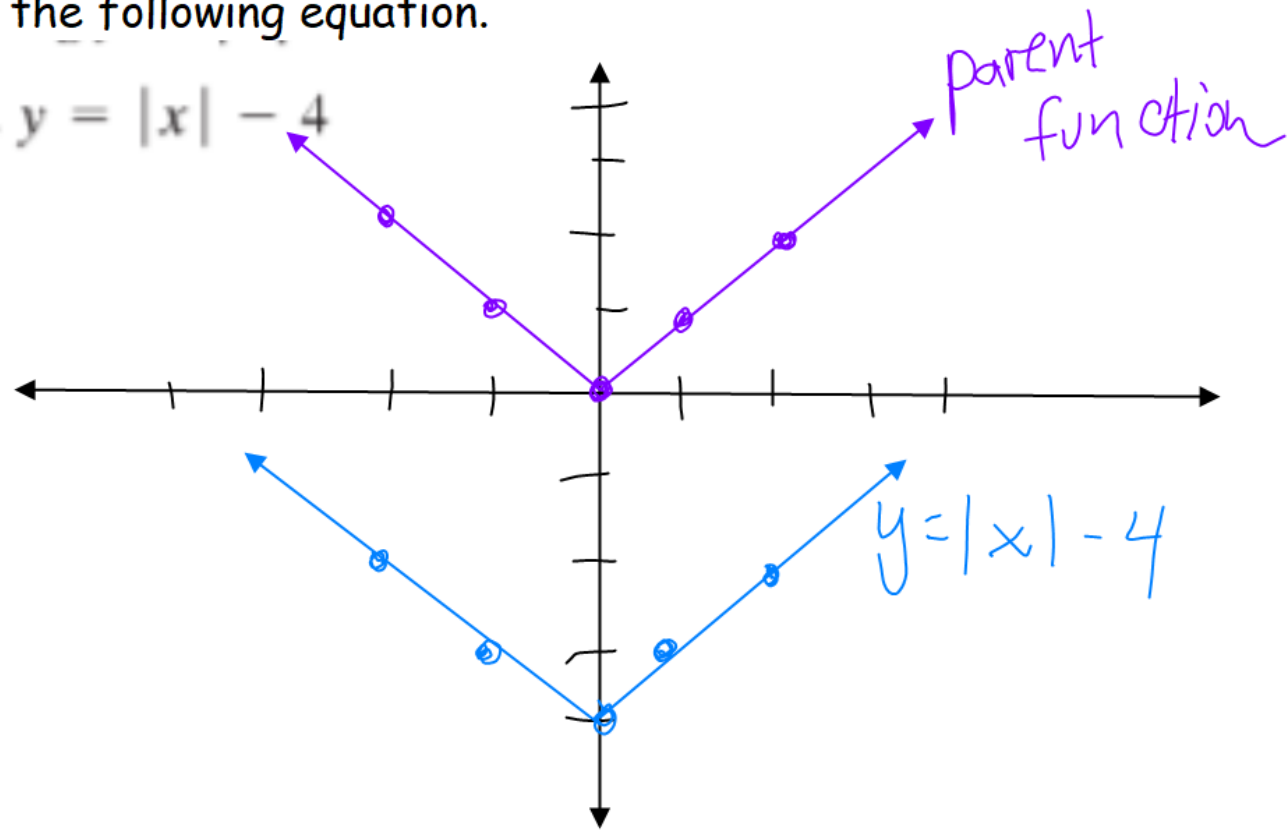
Start with a graph of  $y = |x|$ .

Translate the graph *down* 3 units.



Graph the following equation.

5.  $y = |x| - 4$



**3 EXAMPLE**Write an equation for each translation of  $y = |x|$ .**a.** 9 units down

$$y = |x| - 9$$

**b.** 13 units up

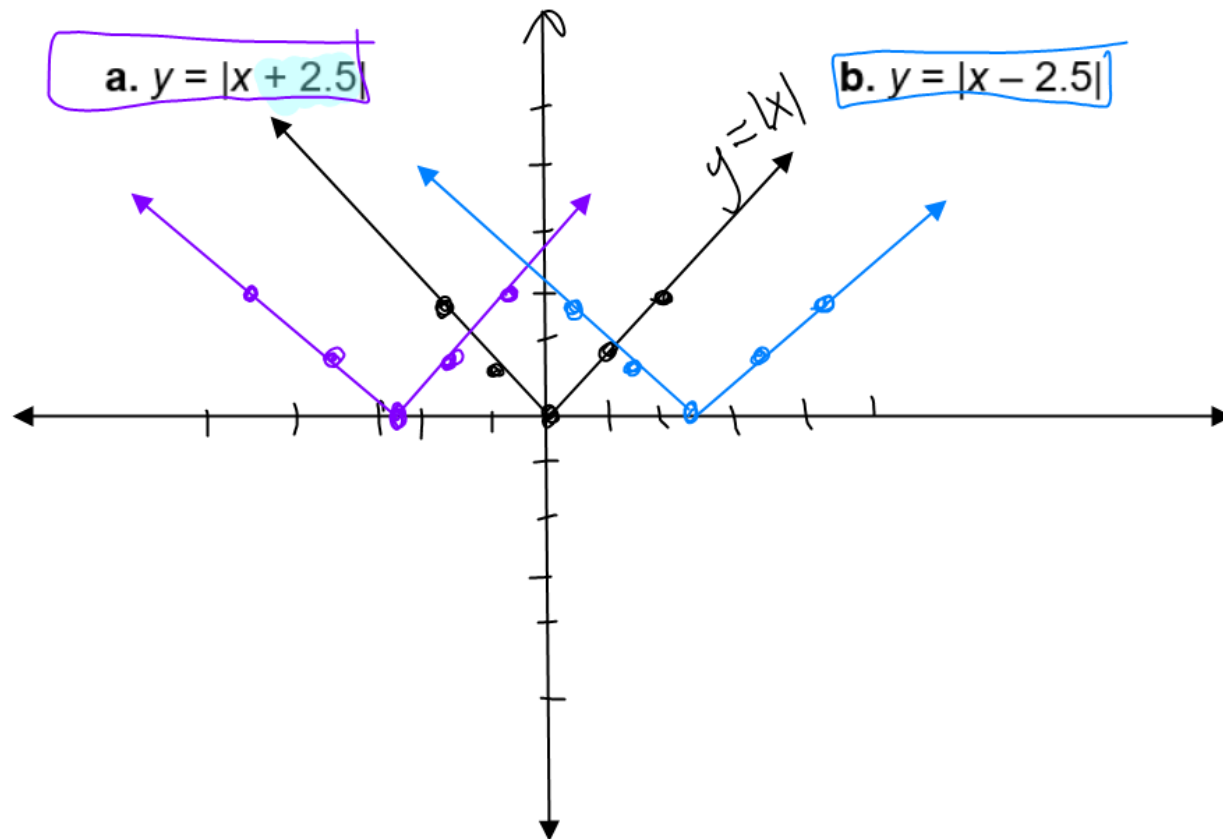
$$y = |x| + 13$$

Write an absolute value equation with the following translation.

**11.** 6 units down

$$y = |x| - 6$$

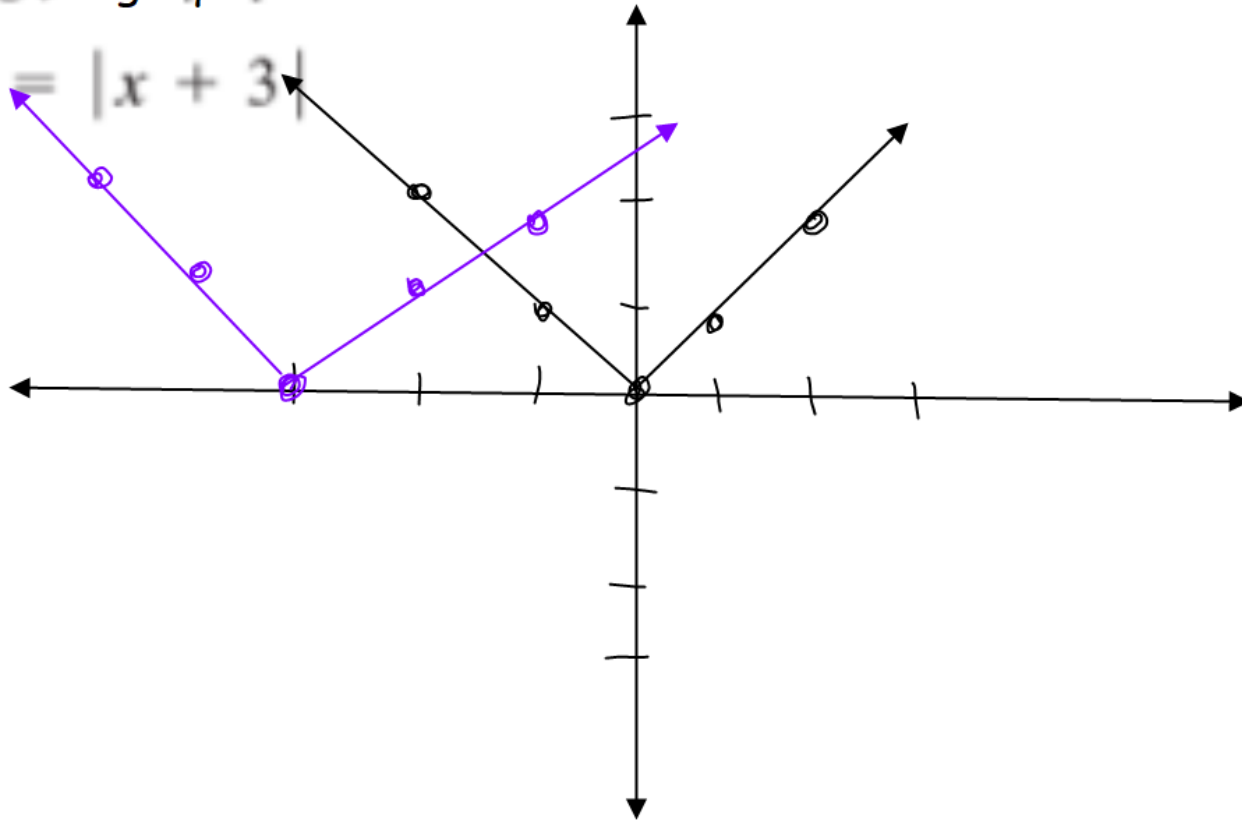
**4 EXAMPLE** Graph each equation by translating  $y = |x|$ .





move left 3  
Graph the following equation.

17.  $y = |x + 3|$



**5 EXAMPLE** Write an equation for each translation of  $y = |x|$ .

a. 10 units left

$$y = |x + 10|$$

~~$$|x| + 10$$~~

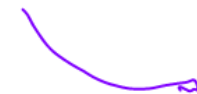
b. 7 units right

$$y = |x - 7|$$

Write an absolute value equation with the following translation.

**23.** right 9 units

$$y = |x - 9|$$



Homework: pg. 361 #2, 4, 8, 10, 15, 16, 21, 22, 24, 36, 40

2) same: slope & "v" shape  
different: y value (down 3)

4)

