

Part II

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2.6: Vertical and Horizontal Shifts and Stretches

Objectives:

- To graph an absolute value function by performing transformations on the parent function

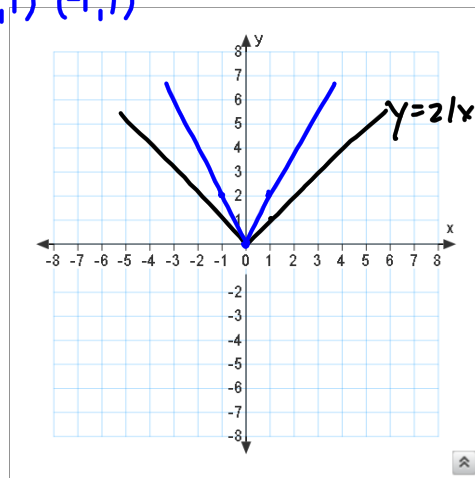
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For $|a| > 1$

- graph is a vertical **stretch**
- Example: $y = 2|x|$

Reference points $(0,0)$ $(1,1)$ $(-1,1)$

X	Y
0	0
1	2
-1	2

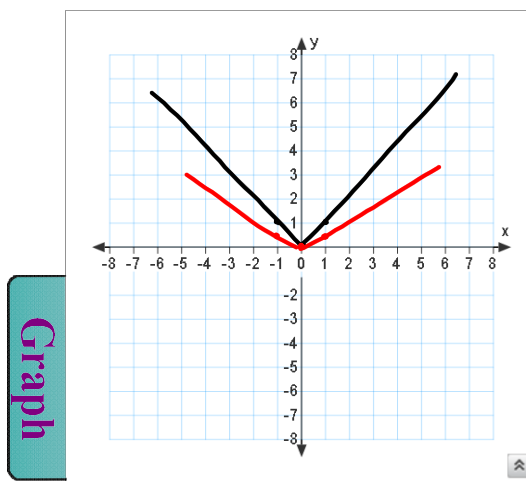


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For $|a| < 1$

- graph is vertical **shrink**
- Example: $y = \frac{1}{2}|x|$

X	Y
0	0
1	$\frac{1}{2}$
-1	$\frac{1}{2}$



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Describe and sketch the graph of $y = -3|x - 1| - 2$.

Remember, always do stretches first!

$(0,0)(1,1)(-1,1)$

$y * -3 \quad (0,0) \quad (1,-3) \quad (-1,-3)$

$x + 1 \quad (1,0) \quad (2,-3) \quad (0,-3)$

$y - 2 \quad (1,-2) \quad (2,-5) \quad (0,-5)$

$y = |x|$
 reflection over x-axis
 vertical stretch factor of 3
 right 1
 down 2

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Other Transformations

Let's graph $y = |2x|$

$(0,0)(1,1)(-1,1)$ means x 's $\div 2$

$(0,0)$

$(\frac{1}{2}, 1)$

$(-1, 1)$

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Other Transformations

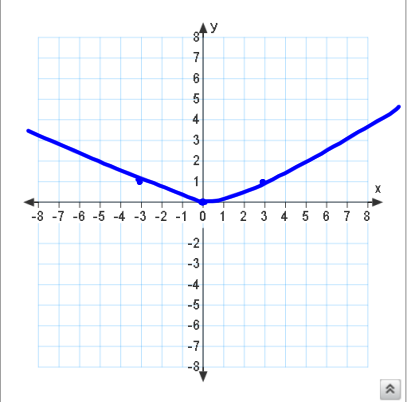
How would you graph $y = \left| \frac{1}{3}x \right|$? Horizontal stretch


$(0,0) (1,1) (-1,1)$

$(0,0) - x * 3 =$

$(3,1)$

$(-3,1)$





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Transformations

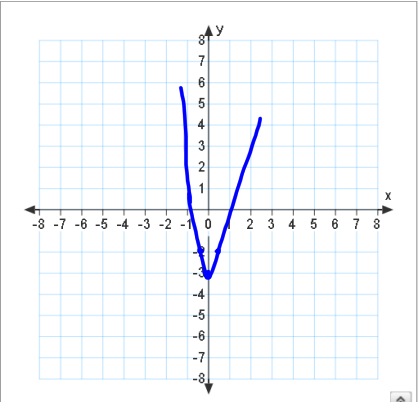
How would you graph $y = |4x| - 3$?


$(0,0) (1,1) (-1,1)$

$x * \frac{1}{4} (0,0) (\frac{1}{4},1) (-\frac{1}{4},1)$

$y - 3 (0,-3) (\frac{1}{4},-2) (-\frac{1}{4},-2)$



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GO COUGARS!


$$a|bx+c|+d$$

HOMEWORK
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#1-15

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