

## Today's Learning Goal(s):

By the end of the class, I will be able to:

- a) apply vertical **vs. horizontal** stretches, compressions, and reflections.

1.6  $y=af(x)$  Parent Functions:

1.7  $y=f(kx)$  Stretches, Compressions and Reflections

Date: Feb. 27/17  
(Every lesson)

Ex.1 Sketch

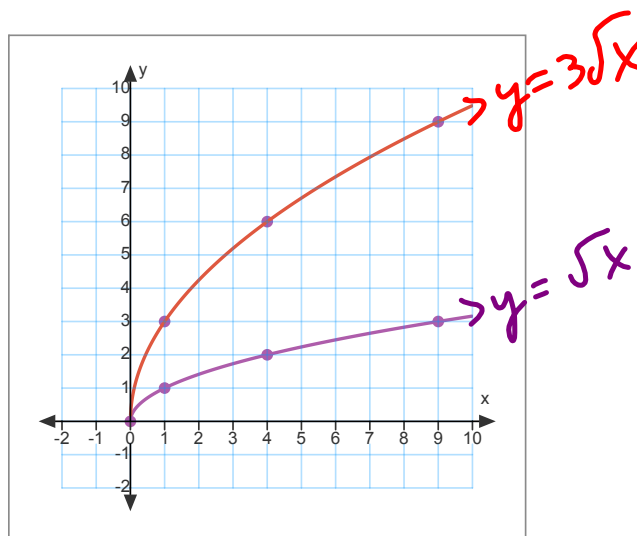
- a) Square Root Function

$$y = \sqrt{x}$$

- b) VERTICAL Stretch  
by a factor of 3.

$$y = 3\sqrt{x}$$

Note: For this transformation  
(0, 0) is an **invariant** point.



Ex.2 Given  $y = f(x)$  on the graph, sketch the new function and briefly describe the transformation applied.

Note:  $y = a f(x)$

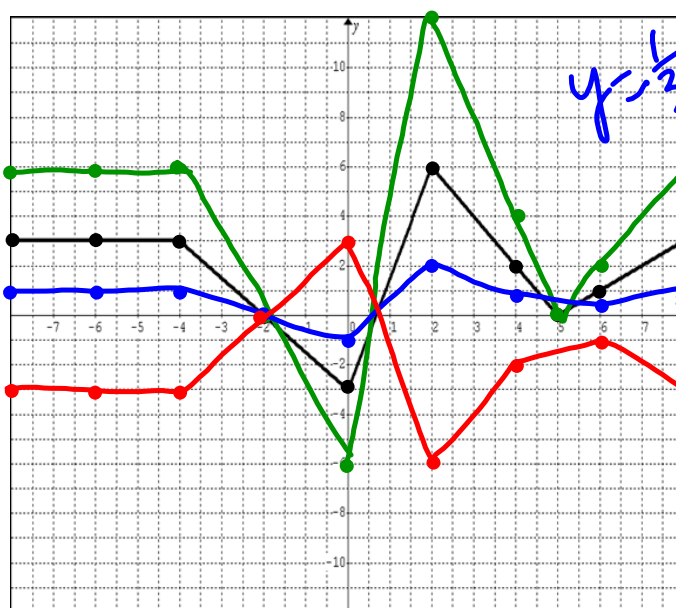
$a \rightarrow$  multiply the  $y$ -values by  $a$

a)  $y = 2f(x)$  ——— •

b)  $y = \frac{1}{3}f(x)$  ——— •

c)  $y = -f(x)$  ——— •

vertical stretch by a factor of



$y = -f(x)$

Ex.3 Given  $y = f(x)$  on the graph, sketch the new function and briefly describe the transformation applied.

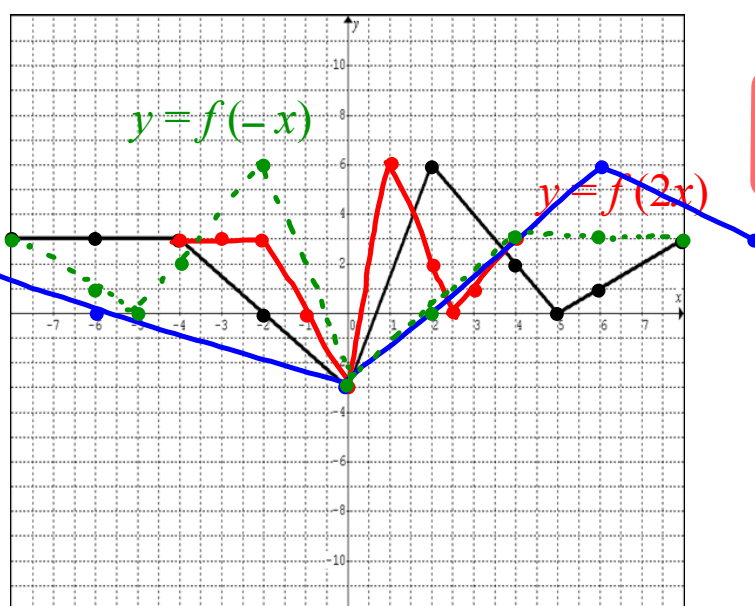
Note:  $y = f(kx)$

$k \rightarrow$  multiply the  $x$ -values by  $1/k$

a)  $y = f(2x)$  — red •  $y = f(\frac{1}{3}x)$

b)  $y = f\left(\frac{1}{3}x\right)$  — blue •

c)  $y = f(-x)$  — green •



horizontal compression by a factor of

Ex.4 Sketch

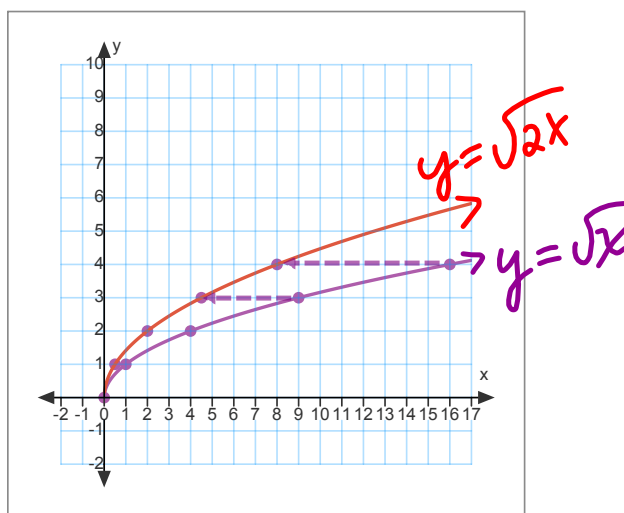
a) Square Root Function

$$y = \sqrt{x}$$

b) **HORIZONTAL** COMPRESSION  
by a factor of  $\frac{1}{2}$ .

$$y = \sqrt{2x}$$

Note: The x value required to  
make  $y = 4$  is 8.



**Are there any Homework Questions you would like to see on the board?**

Last day's work: p. 28 #1 - 3

pp. 35-37 #4, 9, 11 [16, 17]

Today's Homework Practice includes:

p. 51 #1 – 3

pp. 58-60 #1 – 5, 8\*, 10 [14, 15]

\*print "web fix" for useful points