

Youtube: "Function Transformations: Horizontal and Vertical Stretches" by Mathispower4U

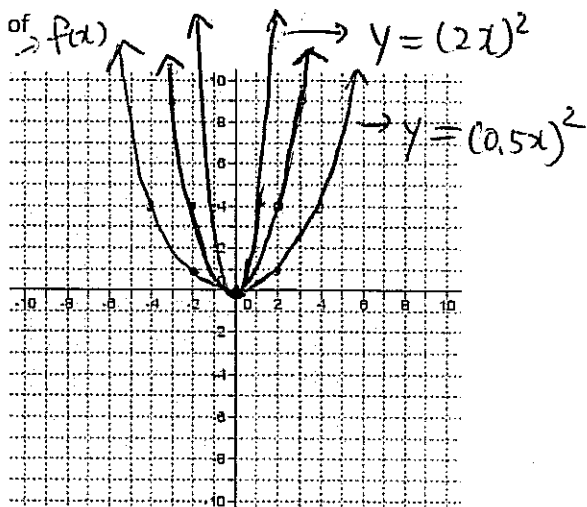
* Quiz on Thurs (March 5)

$y = f(x)$ and $y = f(kx)$

Horizontal stretch and compressions: Comparing functions in the form of

Compare the table of values for $y = x^2$ and $y = (2x)^2$ then graph.

x	y	x	y	x	y
-2	1	-2	16	-2	4
-1	0.25	-1	4	-1	1
0	0	0	0	0	0
1	0.25	1	4	1	1
2	1	2	16	2	4



What do you notice about the graph of compared to ?

The new graph is narrower than parent.

Make a table of values for and graph. What do you notice about this graph compared to ?

$y = (0.5x)^2$ The new graph is wider.

If $k > 1$, the graph is compressed horizontally. (b/c x coordinates \downarrow)

If $0 < k < 1$, the graph is stretched horizontally. (because x coordinates \uparrow)

Mapping Notation: $(x, f(x)) \rightarrow (\frac{1}{k}x, f(x))$ → points on child function

points on parent function

How you say it (State the transformations): $y = |3x|$

Example 3 For function, what is the base function?

Describe the transformation. Graph it.

* Parent F: $y = |x| \rightarrow f(x)$

* child function is compressed horizontally by

a factor of $(\frac{1}{3}) \rightarrow f(3x)$

For given coordinates, coordinates

Example 4, what is the base function? are multiplied by $\frac{1}{3}$

Describe the transformation. Graph it.

$f(\frac{1}{2}x)$

$y = \sqrt{\frac{1}{2}x}$

parent: $y = \sqrt{x} \rightarrow f(x)$

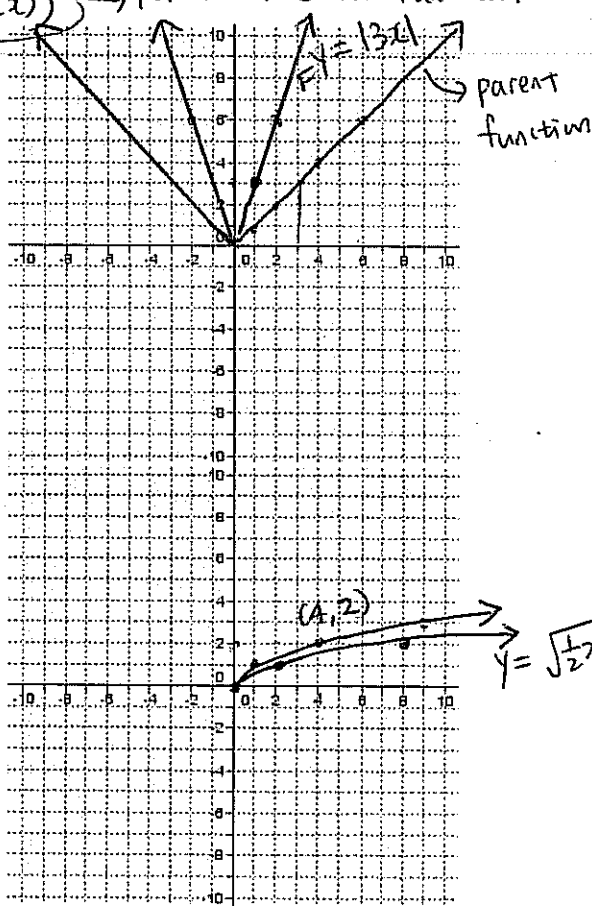
* child function is horizontally stretched

by a factor of $(2) \rightarrow f(\frac{1}{2}x)$

For given coordinates, x coordinates are multiplied

Homework: pg. 119 #(2-4)E00, 6, 7, 11, 15*, 18* by 2.

odd questions such as a, c, e, g



because $\frac{1}{2} = 1 \div \frac{1}{2} = 1 \times 2$