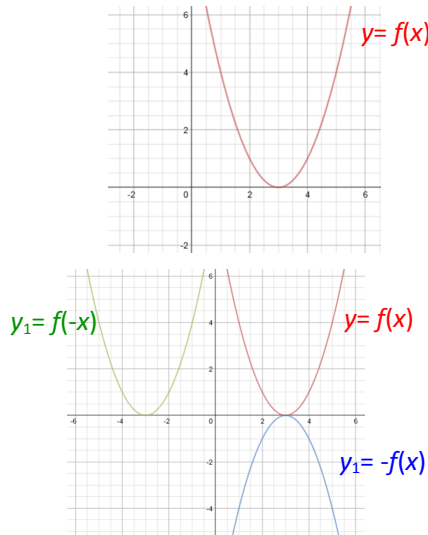


Stretches and Compressions (Lesson).notebook

WARM-UP

Given the function $f(x)$, sketch the new functions:
 $y_1 = -f(x)$ and $y_2 = f(-x)$. Label each function.



HOMEWORK TAKE-UP

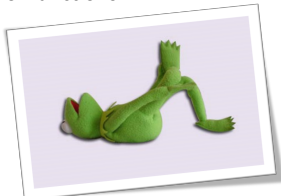
Pg. 203 #1-3, 8, 10



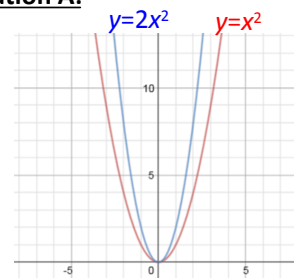
UNIT #4: Inverses and Transformations of Functions Stretches and Compressions

Learning Goal:

I will learn how to graph and interpret stretches and compressions of functions.



Investigation A:



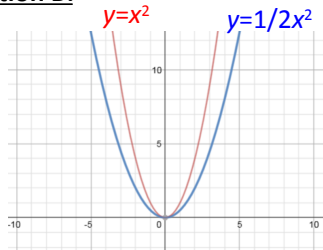
Findings:

How are these graphs different?

The $y = 2x^2$ graph is being vertically stretched by a factor of 2, therefore making it narrower.

Stretches and Compressions (Lesson).notebook

Investigation B:

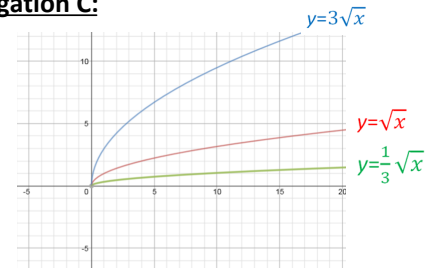


Findings:

How are these graphs different?

Graph is being vertically compressed by a factor of $1/2$, therefore making the graph wider.

Investigation C:



Findings:

What can you conclude from these graphs?

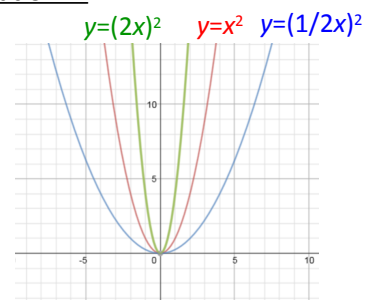
Graph $y = 3\sqrt{x}$, is being vertically stretched by a factor of 3.

Graph $y = \frac{1}{3}\sqrt{x}$ is being vertically compressed by a factor of $1/3$.

SUMMARY OF VERTICAL STRETCHES AND COMPRESSIONS:

- The function $af(x)$ will be **stretched vertically** by a factor of a if $a > 1$ or $a < -1$.
- The function $af(x)$ will be **compressed vertically** by a factor of a if $-1 < a < 1$.

Investigation D:



Findings:

Which of the functions stretches $y = x^2$ horizontally?

$y = (1/2x)^2$

This is a **horizontal stretch** by a factor of 2

Which of the functions compresses $y = x^2$ horizontally?

$y = (2x)^2$

This is a **horizontal compression** by a factor of $1/2$

Stretches and Compressions (Lesson).notebook

SUMMARY OF HORIZONTAL COMPRESSIONS AND STRETCHES:

- For the function $y = f(kx)$, if $k > 1$ or $k < -1$, compress the graph horizontally by a factor of $1/k$.
- If $-1 < k < 1$, stretch the graph horizontally by a factor of $1/k$.

UNIT 4: Inverses and Transformation of Functions Stretches and Compressions

Learning Goal:

I will learn how to graph and interpret stretches and compressions of functions.

Success Criteria:

To be successful, I must be able to...

- Graph stretches and compressions of functions.
- Recognize when it is a vertical stretch/compression or a horizontal stretch/compression

Last day tomorrow!
Bring in canned goods!



Practice Work

Pg. 229 #1, 3, 5, 6, 10, 11

Formative
Tomorrow!