What's Going On?

Checking In   Homework Logs

Minds on   Yesterday's F.F.M.

Action!   *One Last Little Thing*

Consolidation   Clear / Unclear?

Learning Goal - I will be ready for tomorrow's test!

Checking InWarmup Question

In your LGL, on the page from last time, copy and complete the question below:

For $f(x) = x^2$,

  a. List the transformations that would need to be applied to obtain the graph of
$$g(x) = -2f\left[-\frac{1}{2}(x - 1)\right] + 3.$$

  b. Determine the domain and range of $g(x)$.

  c. Determine any invariant points between $f(x)$ and $g(x)$.

Goes in your **little books** with the learning goal from last time!

List the transformations.

$$g(x) = -2f\left[-\frac{1}{2}(x - 1)\right] + 3$$

Parameters

$a = -2$ $k = -\frac{1}{2}$ $d = +1$ $c = +3$

a = -2

A vertical **stretch** of 2 and a **reflection in the x-axis** (multiply y-values by -2)

k = -0.5

A horizontal **stretch** of 2 and a **reflection in the y-axis** (**divide** the **x**-values by -0.5)

d = +1

A horizontal shift 1 unit to the right.
(Add 1 to each x-value)

c = +3

A vertical shift 3 units up
(Add 3 to each y-value)

For $f(x) = x^2$, $g(x) = \boxed{-2}f\left[-\frac{1}{2}(x - 1)\right] + 3$

$f(x)$: domain $= \{x \in \mathbb{R}\}$

range $= \{f(x) \in \mathbb{R} \mid f(x) \geq 0\}$
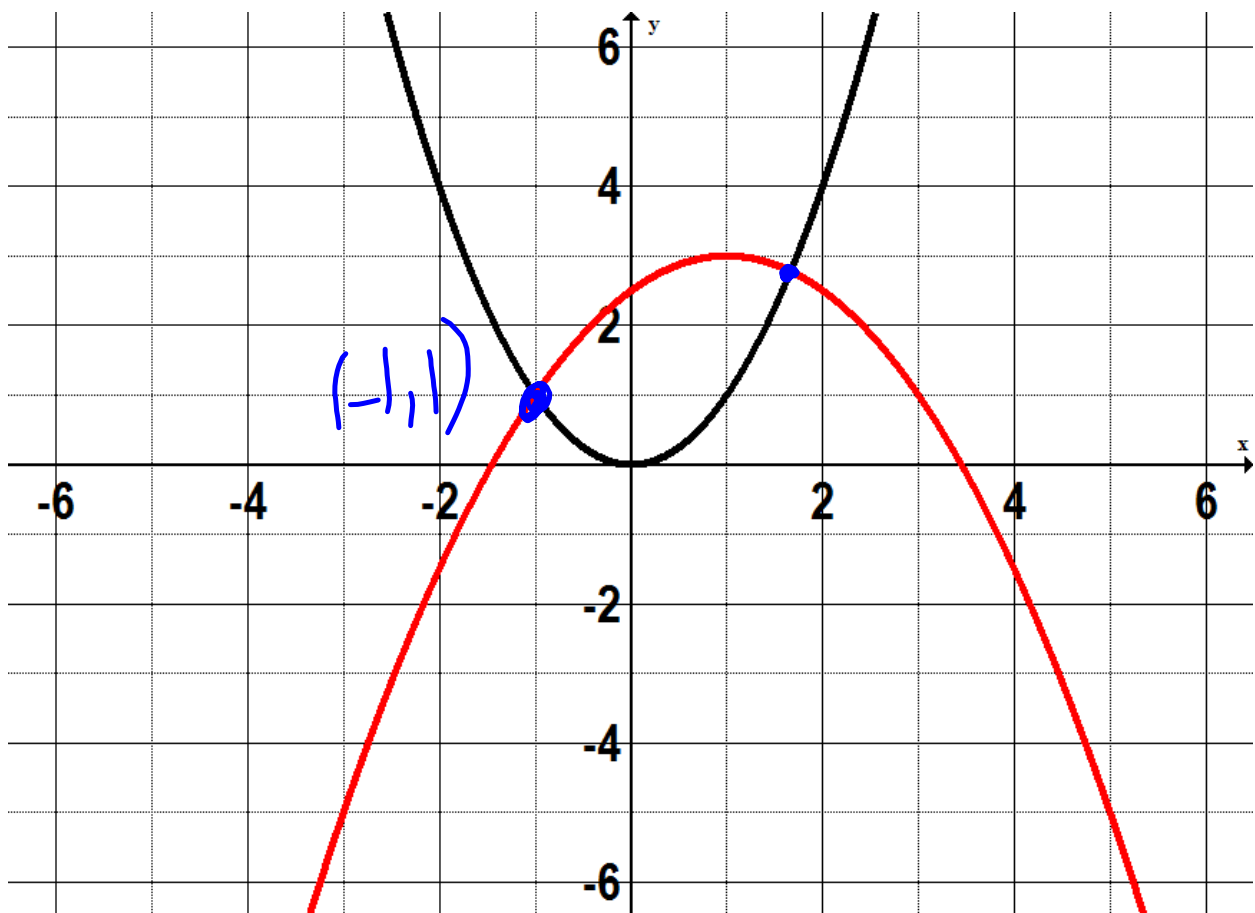
b. Determine the domain and range of $g(x)$.

domain $= \{x \in \mathbb{R}\}$

range $= \{g(x) \in \mathbb{R} \mid g(x) \leq 3\}$

For $f(x) = x^2$, $g(x) = -2f\left[-\frac{1}{2}(x-1)\right] + 3$

   c. Determine any invariant points between
      $f(x)$ and $g(x)$.

$(-1,1)$

Checking In

Homework Logs

I will be collecting them on Thursday (test day).

As you come in on Thursday, sit at your own table.

Leave your homework log on top of all of your unit homework on one side of the table.

Minds on

One Question to Tie It All Together

$$f(x) = \sqrt{x}$$

x	y
0	0
1	1
4	2
9	3

$$g(x) = -3\sqrt{-2(x-9)} + 3$$

x-values
÷ by -2
then +9

y-values
multiply
by -3,
add 3

x	y
9	3
8.5	0
7	-3
4.5	-6

$$g(x) = -3\sqrt{-2(x-9)} + 3$$

$$y = -3\sqrt{-2(x-9)} + 3$$

$$x = -3\sqrt{-2(y-9)} + 3$$

$$\frac{x-3}{-3} = \frac{-3\sqrt{-2(y-9)}}{-3}$$

$$\left(\frac{-x+3}{3}\right)^2 = \left(\sqrt{-2(y-9)}\right)^2$$

$$(y-9) \cdot \frac{-1}{-2}\left(\frac{-x+3}{3}\right)^2$$

$$y = -\frac{1}{2}\left(\frac{-x+3}{3}\right)^2 + 9$$

Action!

One Last Little Thing...

When we are dealing with transformations, we need our functions to be in the form:

$$y = af\left[k(x-d)\right] + c$$

When we are dealing with transformations, we need our functions to be in the form:

$$y = af\left[k(x-d)\right] + c$$

For $f(x) = x^2$, list the transformations required to obtain

$$g(x) = -4f(-5x - 30) + 3$$

Huh?! That isn't in the form: $af[k(x-d)] + c$

$$g(x) = -4f(-5(x+6)) + 3$$

$a = -4 \qquad k = -5 \quad d = -6 \quad c = 3$

Consolidation

Homework!

gilbertmath.com

Attachments

3U 1.9 (Using Transformations to Graph Functions) - Exit Card.pdf