

Warm Up:

Describe the transformations that have occurred to $h(x)$ to obtain the function $y = -5h\left(\frac{2}{3}x\right)$

If $(-1, 4)$ is a point on the function $h(x)$, what would be the new point on the transformed function?

Combining Transformations

When a function has a combination of transformations, apply them in order left to right when in the form:

$$y = \pm af[\pm b(x - h)] + k$$

1. Reflection in x-axis with Vertical Stretches and Compressions.
2. Reflection in y-axis with Horizontal Stretches and Compressions.
3. Translations (Horizontal and Vertical Shifts)

Example 1:

a) Describe, in order, how the graph of $y = -2f(4(x - 2))$ can be obtained from the graph of $y = f(x)$.

b) If (x, y) was a point on $f(x)$, what would the value of the coordinates be after the 4 transformations?

$$(x, y) \rightarrow (\quad)$$

Example 2:

Given $f(x) = x^2 + 3$

a) Describe how the graph of $y = -\frac{1}{2}f(2x + 6) - 2$ can be obtained from $f(x)$.

*First

b) What is the new "image equation"?

c) Graph.

