

10. Thomas and Sharyn discuss the order of the transformations of the graph of $y = -3|x|$ compared to the graph of $y = |x|$.

Thomas states that the reflection must be applied first. Sharyn claims that the vertical stretch should be applied first.

a) Sketch the graph of $y = -3|x|$ by applying the reflection first.

b) Sketch the graph of $y = -3|x|$ by applying the stretch first.

c) Explain your conclusions. Who is correct?

a) $g_1(x) = \text{reflection on } f(x) = -|x|$

$g_2(x) = \text{stretch on } g_1(x) = 3g_1(x) = 3(-|x|) = -3|x|$

↑ the final transformation

b) $g_1(x) = \text{stretch on } f(x) = 3|x|$

$g_2(x) = \text{reflection on } g_1(x) = -g_1(x) = -[3|x|] = -3|x|$

The two methods yield the same result.

The order b/w reflection & stretch on the same dimension (in this case vertical, i.e., on the y coordinate) does not matter.

The 2 students argue both that one of the orders must happen 1st. They r both wrong b/c the order does not matter.