

Transformations of Transformations Worksheet

Name: KEY Date: _____ Period: _____

- 1) Write an equation for the function $f(x) = 2|x| + 1$ translated left three units.

$$f(x) = 2|x+3| + 1$$

- 2) Write an equation for the function $f(x) = 3x^2 + 5$ translated down two units.

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

- 3) Write an equation for the function $f(x) = \frac{1}{2}x^3$ flipped horizontally.

$$f(x) = -\frac{1}{2}x^3$$

- 4) Write an equation for the function $f(x) = -3\sqrt{x-1}$ compressed by a factor of $\frac{1}{5}$.

$$f(x) = -\frac{3}{5}\sqrt{x-1}$$

$$3 \cdot \frac{1}{5} = \frac{3}{5}$$

- 5) The function $f(x) = \frac{1}{6}|x|$ is stretched vertically by a factor of 9. Which of the following is the new function?

A. $9|x|$ B. $\frac{10}{6}|x|$ C. $\frac{1}{54}|x|$ **D. $\frac{3}{2}|x|$**

$$\frac{1}{6}(9) = \frac{9}{6} = \frac{3}{2}$$

- 6) The function $f(x) = 2x^2$ is flipped vertically and shifted up 4. How would you write the new equation?

switch sign add 4 "outside"

$$f(x) = -2x^2 + 4$$

- 7) The function $y = -(x-3)^2$ is flipped vertically, stretched by a factor of 3, and translated left 4 units. What function would represent the new transformation?

$$y = 3(x+1)^2$$

$$-(x-3)^2 + 4$$

- 8) The function $f(x) = 8(x-4)^3 - 3$ flipped, compressed vertically by a factor of $\frac{1}{2}$ and translated down 5 units. What function would represent the new transformation?

$$f(x) = -4(x-4)^3 - 8$$

$$-3 - 5 = -8$$

$$8\left(\frac{1}{2}\right) = 4$$

- 9) What is the equation of $y = 2|x+4|$ flipped vertically and translated right three units?

$$y = -2|x+2|$$

- 10) What is the equation of the function $y = \frac{1}{2}(x-2)^2 + 2$ translated down two units, left two units, and stretched vertically by a factor of 2?

$$\frac{1}{2}(2) = 1$$

$$\frac{-2}{0}$$

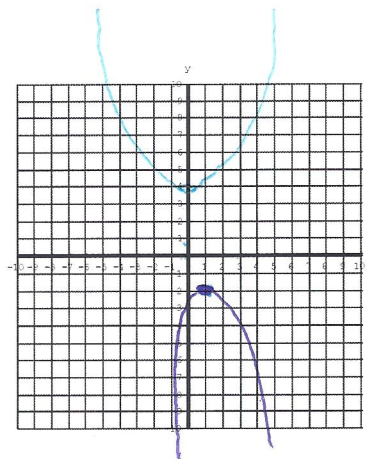
$$\frac{-2}{0}$$

$$y = x^2$$

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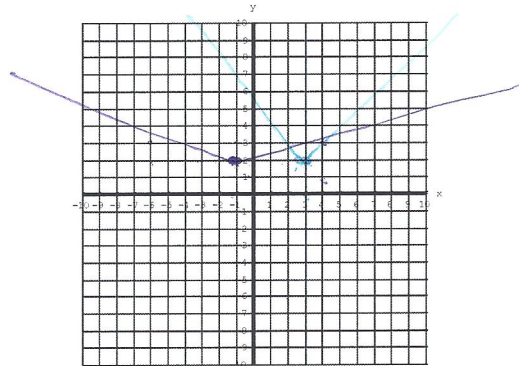
11. What transformations are done to $f(x)$ to create $g(x)$ if $f(x) = x^2 + 4$ and $g(x) = -9(x - 1)^2 - 2$?

R1
D6
Stretch factor 9
Vertical flip

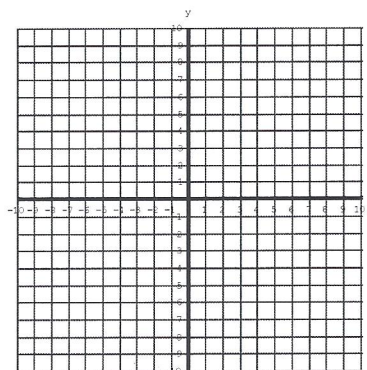


12. What transformations are done to $f(x)$ to create $g(x)$ if $f(x) = |x - 3| + 2$ and $g(x) = 5|x + 1| + 2$?

R4
Stretch factor 5

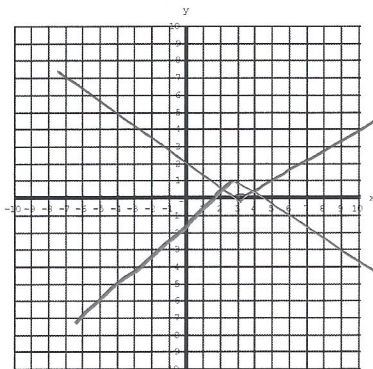


DUPE 13. What transformations are done to $f(x)$ to create $g(x)$ if $f(x) = |x - 3| + 2$ and $g(x) = 5|x + 1| + 2$?



14. Graph the original function and then that function with the transformations indicated.

$f(x) = |x - 3|$
Shifted up 1
Flipped vertically



$f(x) = 4\sqrt{x - 2}$
Compressed by a factor of $\frac{1}{8}$
Shifted left 3

$$4\left(\frac{1}{8}\right) = \frac{1}{2}$$

← NEW

