

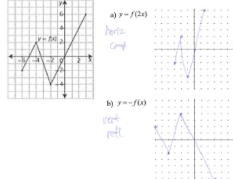
Take up quiz 1

Quiz 1

1. What is the equation of the function after the following transformation? Use the proper function when it is given.

- a) $y = f(x)$ vertical translation of 5 up $y = f(x) + 5$
 b) $y = x^2$ vertical reflection $y = -x^2$
 c) $y = \frac{1}{x}$ horizontal translation 3 left $y = \frac{1}{x+3}$
 d) $y = f(x)$ horizontal stretch of 3 $y = f(\frac{1}{3}x)$

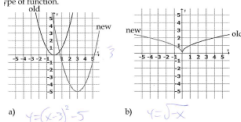
3. Given the graph of $y = f(x)$, graph ...



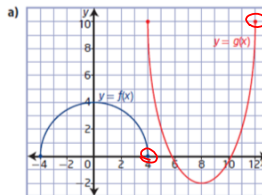
2. What is the mapping that goes with ...

- a) $y = f(x)$ vertical translation of 5 up $(x, y) \rightarrow (x, y+5)$
 b) $y = x^2$ vertical reflection $(x, y) \rightarrow (x, -y)$
 c) $y = \frac{1}{x}$ horizontal translation 3 left $(x, y) \rightarrow (x+3, y)$
 d) $y = f(x)$ horizontal stretch of 3 $(x, y) \rightarrow (3x, y)$

What is the equation of the transformed function? Use the proper rpe of function.



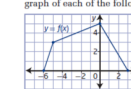
10. The graph of the function $y = g(x)$ represents a transformation of the graph of $y = f(x)$. Determine the equation of $g(x)$ in the form $y = af(b(x-h)) + k$.



V ref.
V str 3
8 →
10 ↓

8. Given the function $y = f(x)$, write equation of the form $y = a f(b(x-h)) + k$ that would result from each row of transformation.
 a) a vertical stretch about the x-axis of 3, a reflection in the y-axis, a horizontal translation of 4 to the left, and a vertical translation 5 units down

9. The graph of $y = f(x)$ is given. Sketch graph of each of the following functions.



- a) $y + 2 = f(x - 3)$
 b) $y = -f(-x)$
 c) $y = f(3(x - 2)) + 1$

Combinations II (1.3)

p38

day 6

What about mappings?

ex1: For each function, write the mapping

- a) $y = 2(x-4)^2 - 3$ $(x, y) \rightarrow (x+4, 2y-3)$
 b) $y = -\sqrt{\frac{1}{2}(x-3)}$ $(x, y) \rightarrow (2x+3, -y)$
 c) $y = \frac{1}{4}f(-3(x-5)) + 6$ $(x, y) \rightarrow (\frac{1}{3}x+5, \frac{1}{4}y+6)$

Combinations II (1.3)

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vertical reflection
 horizontal reflection
 horizontal translation
 $y = -af(-b(x-h)) + k$
 vertical stretch
 horizontal compression
 vertical translation

Combinations II (1.3)

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day 6

A few notes:

Mappings are logical - what you would expect

Never use brackets in a mapping

From a graph to a mapping, do the obvious

From a function to a mapping, remember to reverse the x stuff

Order: reflections & stretches, then translations

$$y = -af(-b(x-h)) + k \quad (x, y) \rightarrow \left(\frac{-1}{b}x + h, -ay + k\right)$$

Combinations II (1.3)

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day 6

6. a)

$$y = f(x-4) - 6$$

$$(x, y) \rightarrow (x+4, y-6)$$

$$(12, 8) \rightarrow (-8, 12)$$

6. The key point $(-12, 18)$ is on the graph of $y = f(x)$. What is its image point under each transformation of the graph of $f(x)$?

- a) $y + 6 = f(x - 4)$
 b) $y = 4f(3x)$
 c) $y = -2f(x - 6) + 4$
 d) $y = -2f(-\frac{2}{3}x - 6) + 4$
 e) $y + 3 = -\frac{1}{3}f(2(x + 6))$

$$y = f(2x+4) - 3$$

$$f(2(x+2)) - 3$$

b, c

Combinations II (1.3) p38 day 6

10 b, c

b)

d)

$y = -\frac{1}{2}f(-2(x+4)) + 7$

v refl. 3 →
 v str 2 2 ↑
 $y = -2f(x-3) + 2$

Combinations II (1.3) p38 day 6

HW: p38 #13, 14, 16a*

Combinations II (1.3) p38 day 6

7. a)

7. Describe, using an appropriate order, how to obtain the graph of each function from the graph of $y = f(x)$. Then, give the mapping for the transformation.

a) $y = 2f(x - 3) + 4$

b) $y = -f(3x) - 2$

c) $y = -\frac{1}{4}f(-(x + 2))$

d) $y - 3 = -f(4(x - 2))$

e) $y = -\frac{2}{3}f(-\frac{3}{4}x)$

f) $3y - 6 = f(-2x + 12)$

7b, c