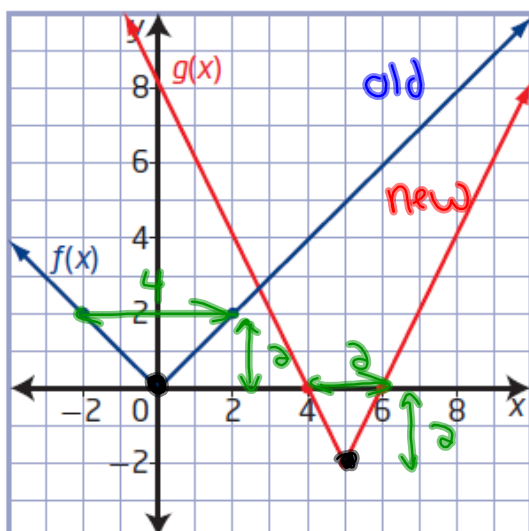


Review

11. Write the equation for the graph of $g(x)$ as a transformation of the equation for the graph of $f(x)$.



① Reflections: None

② VSF = $\frac{2}{2} = 1$ ($a=1$)

③ HSF = $\frac{2}{4} = \frac{1}{2}$ ($b=2$)

④ HT: $(\underline{0}, \underline{0}) \rightarrow (\underline{5}, \underline{-2})$ ($h=5$)

⑤ VT: $(\underline{0}, \underline{0}) \rightarrow (\underline{5}, \underline{-2})$ ($k=-2$)

⑥ $y = |f[\frac{1}{2}(x-5)]| - 2$



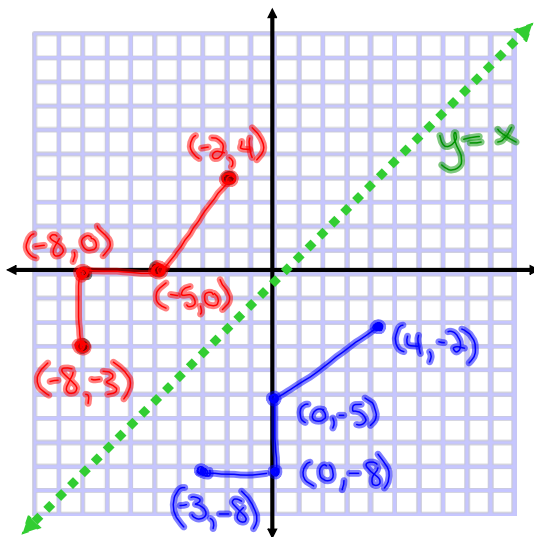
7. Describe, using an appropriate order, how to obtain the graph of each function from the graph of $y = f(x)$. Then, give the mapping for the transformation.

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

reflection in the y -axis, horizontal stretch by a factor of $\frac{1}{2}$, vertical stretch by a factor of $\frac{1}{3}$, and translation of 6 units right and 2 units up;

$$(x, y) \rightarrow \left(-\frac{1}{2}x + 6, \frac{1}{3}y + 2\right)$$

Inverse Relations



a) Sketch the Inverse

b) Is the Inverse a function?

Neither the relation or
it inverse are functions

a) Determine the Inverse of $f(x) = 3\sqrt{x-5} + 8$

① $y = 3\sqrt{x-5} + 8$

② $x = 3\sqrt{y-5} + 8$

③ $x-8 = 3\sqrt{y-5}$

$$\frac{1}{3}(x-8) = \sqrt{y-5}$$

$$\frac{1}{9}(x-8)^2 = y-5$$

$$\frac{1}{9}(x-8)^2 + 5 = y$$

$$y = \frac{1}{9}(x-8)^2 + 5$$

④ $f^{-1}(x) = \frac{1}{9}(x-8)^2 + 5$

b) State the domain of $f(x)$ and $f^{-1}(x)$

$$f(x) = 3\sqrt{x-5} + 8$$

$a=3$ $b=1$ $h=5$ $k=8$

D: $\{x | x \geq 5, x \in \mathbb{R}\}$

R: $\{y | y \geq 8, y \in \mathbb{R}\}$

$$f^{-1}(x) = \frac{1}{9}(x-8)^2 + 5$$

D: $\{x | x \geq 8, x \in \mathbb{R}\}$

R: $\{y | y \geq 5, y \in \mathbb{R}\}$

Homework

Chapter Review from textbook...

Pages 56-57

#2, 3, 6, 9, 10, 11, 14, 15, 16

Practice Test

Pages 58-59

All questions

Unit Test:

- Function notation
- combinations:
- compositions:
- catalogue of essential functions
- transformations:

↳ Reflections, Stretches, Translations

↳ $y = a f(b(x-h)) + k$

- vertical stretch by a factor of a
- if $a < 0$ reflect in x -axis

- horizontal stretch by a factor of $\frac{1}{|b|}$
- if $b < 0$ reflect in y -axis

- horizontal translation shift left/right

- vertical translation shift up/down

- Mapping:

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

⇒ Inverse Functions

- Switch "x" & "y" (Domain & Range)
- Sketch Inverses from a given graph
(Reflects in line $y=x$)
- One-one function (Horizontal line)
- Switch to inverse algebraically

ie. $f(x) = x + 7$

$$x = y + 7$$

$$x - 7 = y$$

$$f^{-1}(x) = x - 7$$