

Chapter 1.8: Inverse Functions

to find: switch x and y then solve for y

to check: $(f \circ g)(x) = x$

on graph: flipped over $y=x$

$$\begin{array}{l} y = 3x + 4 \\ x = 3y + 4 \end{array}$$

Show that the functions are inverses.

$$f(x) = 5x \quad g(x) = \frac{x}{5}$$

$$f(g(x)) \stackrel{?}{=} x$$

$$\cancel{5\left(\frac{x}{5}\right)} = x$$

Show that the functions are inverses.

$$f(x) = 3x + 2 \quad g(x) = \frac{x-2}{3}$$

$f(g(x))$

~~$3\left(\frac{x-2}{3}\right) + 2$~~

x

Find the inverse: $f(x) = 7x - 5$

find the inverse: $f(x) = x^3 + 1$

$$y = x^3 + 1$$

$$x = y^3 + 1$$

$$\sqrt[3]{x-1} = \sqrt[3]{y^3}$$

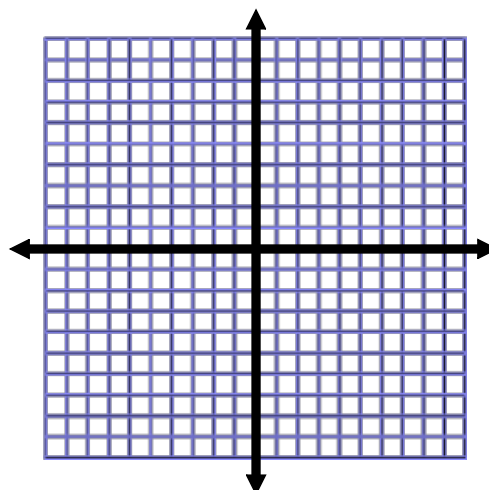
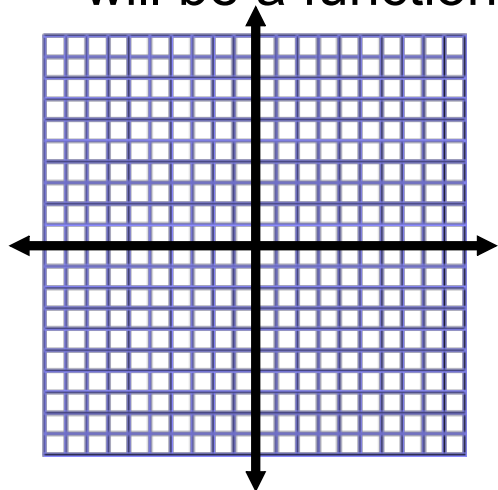
$$y = \sqrt[3]{x-1}$$

$$f(g(x)) = (\sqrt[3]{x-1})^3 + 1$$

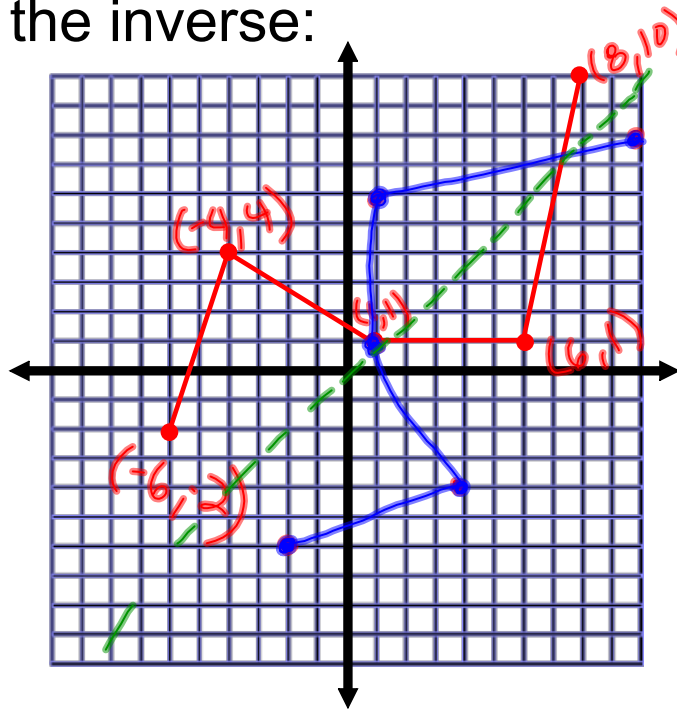
$$f(g(x)) = x$$

Horizontal Line Test:

- Tests to see if the functions inverse will be a function.



Graph the inverse:



Homework:

Chapter 1.8 pg.216 #'s
3,7,19,25,31,37