

## Function Inverses

**State if the given functions are inverses.**

1)  $g(x) = -4x$   
 $f(x) = -6x - 1$

2)  $h(n) = \frac{2}{9}n + \frac{10}{9}$   
 $f(n) = -5 + \frac{9}{2}n$

3)  $g(n) = \frac{4}{-n+2}$   
 $f(n) = -\frac{4}{n} + 2$

4)  $g(x) = \frac{10}{7}x - \frac{15}{7}$   
 $f(x) = -4 - \frac{4}{5}x$

**Find the inverse of each function.**

5)  $h(x) = \frac{3}{-x-2}$

6)  $f(x) = \frac{2}{7}x - \frac{10}{7}$

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

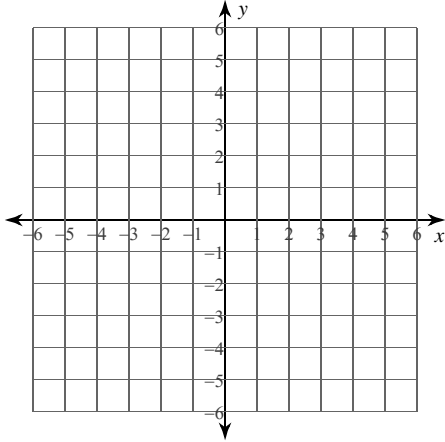
8)  $h(x) = -2x + 5$

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

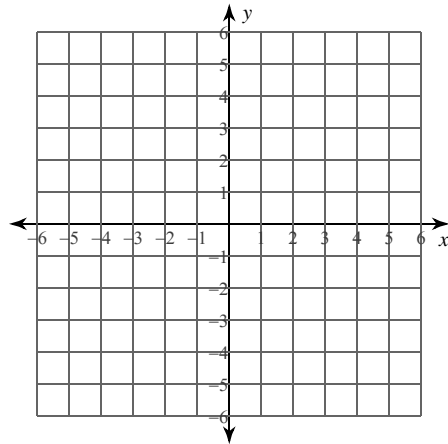
10)  $f(x) = \frac{1}{x} - 1$

Find the inverse of each function. Then graph the function and its inverse.

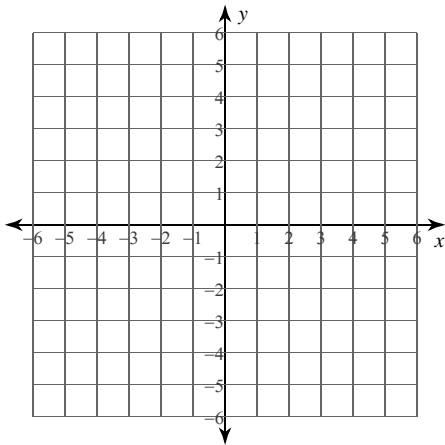
11)  $f(x) = \sqrt[5]{x+1} + 2$



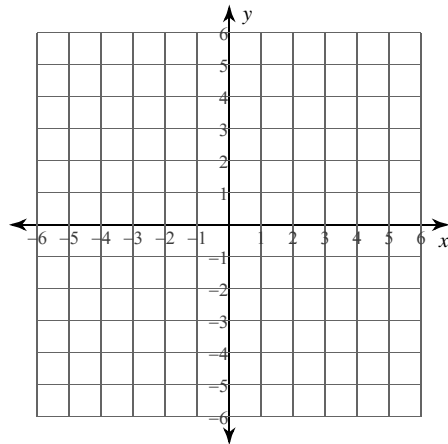
12)  $f(x) = -\frac{3}{x} + 2$



13)  $g(x) = \frac{-3x - 10}{5}$



14)  $g(n) = 2n^3 - 3$



**Critical thinking questions:**

15) Give an example of a function that doesn't have an inverse.

16) Find the inverse of  $f(x) = \sqrt[4]{x}$

## Function Inverses

State if the given functions are inverses.

$$1) \begin{aligned} g(x) &= -4x \\ f(x) &= -6x - 1 \end{aligned}$$

No

$$2) \begin{aligned} h(n) &= \frac{2}{9}n + \frac{10}{9} \\ f(n) &= -5 + \frac{9}{2}n \end{aligned}$$

Yes

$$3) \begin{aligned} g(n) &= \frac{4}{-n+2} \\ f(n) &= -\frac{4}{n} + 2 \end{aligned}$$

Yes

$$4) \begin{aligned} g(x) &= \frac{10}{7}x - \frac{15}{7} \\ f(x) &= -4 - \frac{4}{5}x \end{aligned}$$

No

Find the inverse of each function.

$$5) h(x) = \frac{3}{-x-2}$$

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

$$6) f(x) = \frac{2}{7}x - \frac{10}{7}$$

$$f^{-1}(x) = 5 + \frac{7}{2}x$$

$$7) f(x) = -\frac{3}{-x-3} - 2$$

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

$$8) h(x) = -2x + 5$$

$$h^{-1}(x) = -\frac{1}{2}x + \frac{5}{2}$$

$$9) f(x) = \frac{5}{3}x - \frac{5}{3}$$

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

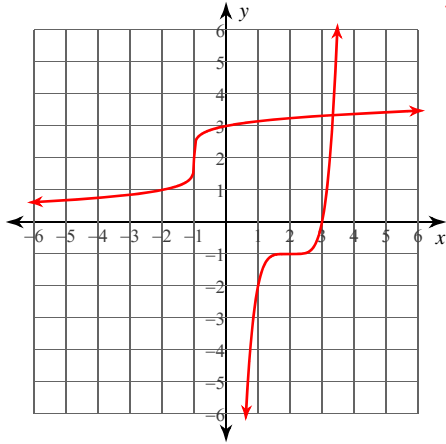
$$10) f(x) = \frac{1}{x} - 1$$

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

Find the inverse of each function. Then graph the function and its inverse.

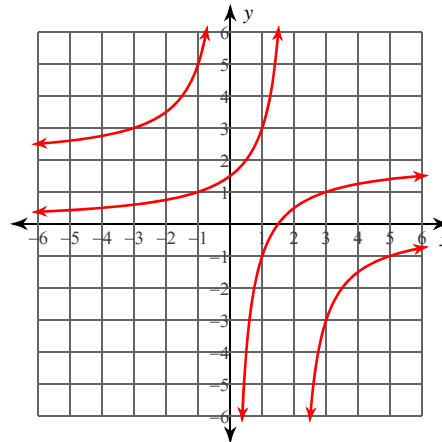
11)  $f(x) = \sqrt[5]{x+1} + 2$

$f^{-1}(x) = (x-2)^5 - 1$



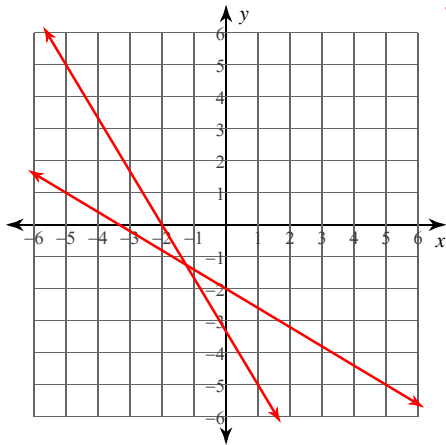
12)  $f(x) = -\frac{3}{x} + 2$

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



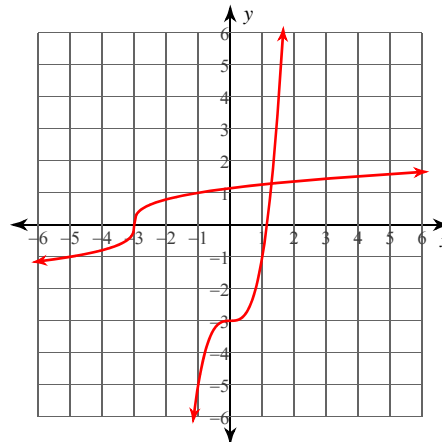
13)  $g(x) = \frac{-3x-10}{5}$

$g^{-1}(x) = \frac{-5x-10}{3}$



14)  $g(n) = 2n^3 - 3$

$g^{-1}(n) = \sqrt[3]{\frac{n+3}{2}}$



**Critical thinking questions:**

15) Give an example of a function that doesn't have an inverse.

$f(x) = x^2$

16) Find the inverse of  $f(x) = \sqrt[4]{x}$

$f^{-1}(x) = x^4$  for  $x \geq 0$