

Inverse Functions and Relations Notes

Find the inverse of each relation.

1. $\{(0, 3), (4, 2), (5, -6)\}$

$\{(3, 0), (2, 4), (-6, 5)\}$

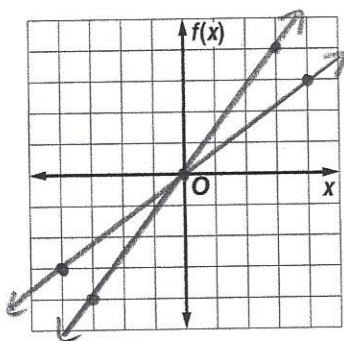
Find the inverse of each function. Then graph the function and its inverse.

2. $f(x) = \frac{3}{4}x$

$\frac{4}{3} \cdot x = \frac{3}{4}y \cdot \frac{4}{3}$

$y = \frac{4}{3}x$

$f^{-1}(x) = \frac{4}{3}x$

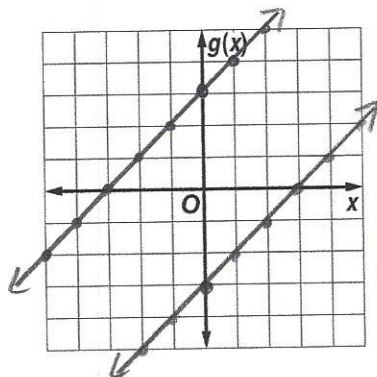


3. $g(x) = 3 + x$

$x = 3 + y$

$y = x - 3$

$g^{-1}(x) = x - 3$



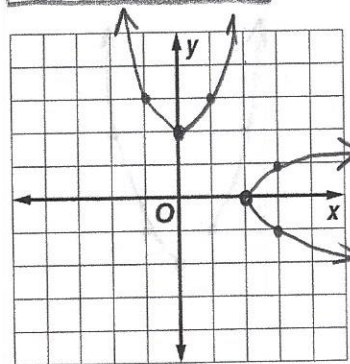
4. $f(x) = x^2 + 2$

$x = y^2 + 2$

$\sqrt{x-2} = \sqrt{y^2}$

$y = \pm\sqrt{x-2}$

$f^{-1}(x) = \pm\sqrt{x-2}$



Determine whether each pair of functions are inverse functions. Write *yes* or *no*.

5. $f(x) = x + 6$

$g(x) = x - 6$

$(f \circ g)(x) = (x-6)+6$
 $= \boxed{x}$

$(g \circ f)(x) = (x+6)-6$
 $= \boxed{x}$

$\boxed{\text{yes}}$

6. $f(x) = -4x + 1$

$g(x) = \frac{1}{4}(1-x)$

$(f \circ g)(x) = -4(\frac{1}{4}(1-x)) + 1$
 $= -4(\frac{1}{4} - \frac{1}{4}x) + 1$
 $= -1 + x + 1$
 $= \boxed{x}$

$(g \circ f)(x) = \frac{1}{4}(1 - (-4x + 1))$
 $= \frac{1}{4}(1 + 4x - 1)$
 $= \frac{1}{4}(4x)$
 $= \boxed{x}$

$\boxed{\text{yes}}$

7. $g(x) = 13x - 13$

$h(x) = \frac{1}{13}x - 1$

$(h \circ g)(x) = \frac{1}{13}(13x - 13) - 1$
 $= x - 1 - 1$
 $= \boxed{x-2}$

$\boxed{\text{no}}$