

7-8

Skills Practice

Inverse Functions and Relations

Find the inverse of each relation.

1. $\{(3, 1), (4, -3), (8, -3)\}$

$\{(1, 3), (-3, 4), (-3, 8)\}$

3. $\{(-10, -2), (-7, 6), (-4, -2), (-4, 0)\}$

$\{(-2, -10), (6, -7), (-2, -4), (0, -4)\}$

5. $\{(-4, 12), (0, 7), (9, -1), (10, -5)\}$

$\{(12, -4), (7, 0), (-1, 9), (-5, 10)\}$

2. $\{(-7, 1), (0, 5), (5, -1)\}$

$\{(1, -7), (5, 0), (-1, 5)\}$

4. $\{(0, -9), (5, -3), (6, 6), (8, -3)\}$

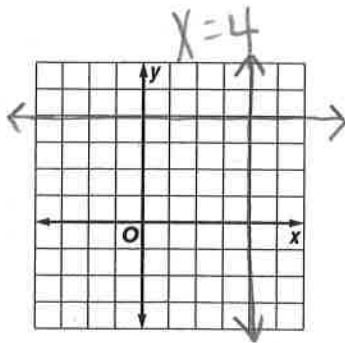
$\{(-9, 0), (-3, 5), (6, 6), (-3, 8)\}$

6. $\{(-4, 1), (-4, 3), (0, -8), (8, -9)\}$

$\{(1, -4), (3, -4), (-8, 0), (-9, 8)\}$

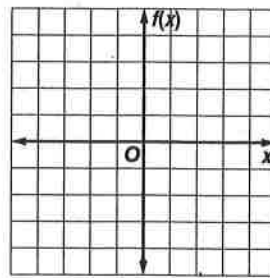
Find the inverse of each function. Then graph the function and its inverse.

7. $y = 4$



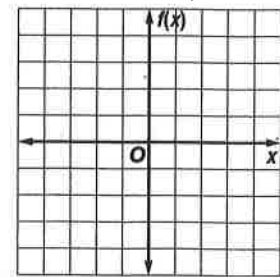
8. $f(x) = 3x$

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



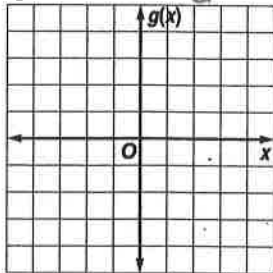
9. $f(x) = x + 2$

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



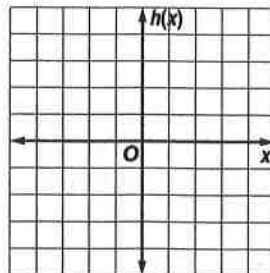
10. $g(x) = 2x - 1$

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



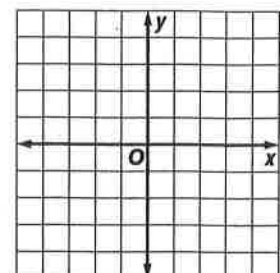
11. $h(x) = \frac{1}{4}x$

$h^{-1}(x) = 4x$



12. $y = \frac{2}{3}x + 2$

$y = \frac{3}{2}x - 3$



Determine whether each pair of functions are inverse functions.

13. $f(x) = x - 1$

$g(x) = \frac{1}{2} - x$

no

14. $f(x) = 2x + 3$

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

yes

15. $f(x) = 5x - 5$

$g(x) = \frac{1}{5}x + 1$

yes

16. $f(x) = 2x$

$g(x) = \frac{1}{2}x$

yes

17. $h(x) = 6x - 2$

$g(x) = \frac{1}{6}x + 3$

no

18. $f(x) = 8x - 10$

$g(x) = \frac{1}{8}x + \frac{5}{4}$

yes

7-8 Practice

Inverse Functions and Relations

Find the inverse of each relation.

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

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

3. $\{(-3, -7), (0, -1), (5, 9), (7, 13)\}$

$\{(-7, -3), (-1, 0), (9, 5), (13, 7)\}$

5. $\{(-5, -4), (1, 2), (3, 4), (7, 8)\}$

$\{(-4, -5), (2, 1), (4, 3), (8, 7)\}$

2. $\{(-5, 1), (-5, -1), (-5, 8)\}$

$\{(1, -5), (-1, -5), (8, -5)\}$

4. $\{(8, -2), (10, 5), (12, 6), (14, 7)\}$

$\{(-2, 8), (5, 10), (6, 12), (7, 14)\}$

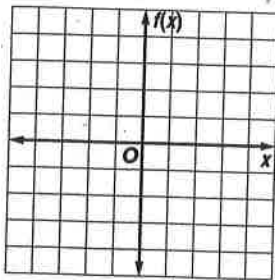
6. $\{(-3, 9), (-2, 4), (0, 0), (1, 1)\}$

$\{(9, -3), (4, -2), (0, 0), (1, 1)\}$

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

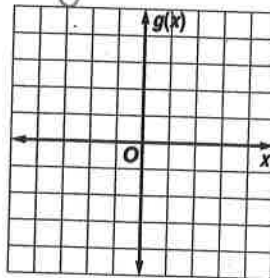
7. $f(x) = \frac{3}{4}x$

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



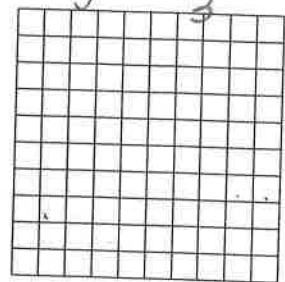
8. $g(x) = 3 + x$

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



9. $y = 3x - 2$

$y = \frac{x+2}{3}$



Determine whether each pair of functions are inverse functions.

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

$g(x) = x - 6$

yes

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

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

yes

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

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

no

13. $f(x) = 2x$

$g(x) = -2x$

no

14. $f(x) = \frac{6}{7}x$

$g(x) = \frac{7}{6}x$

yes

15. $g(x) = 2x - 8$

$h(x) = \frac{1}{2}x + 4$

yes

16. **MEASUREMENT** The points (63, 121), (71, 180), (67, 140), (65, 108), and (72, 165) give the weight in pounds as a function of height in inches for 5 students in a class. Give the points for these students that represent height as a function of weight.

$(121, 63), (180, 71), (140, 67), (108, 65), (165, 72)$

REMODELING For Exercises 17 and 18, use the following information.

The Clearys are replacing the flooring in their 15 foot by 18 foot kitchen. The new flooring costs \$17.99 per square yard. The formula $f(x) = 9x$ converts square yards to square feet.

17. Find the inverse $f^{-1}(x)$. What is the significance of $f^{-1}(x)$ for the Clearys?

$f^{-1}(x) = \frac{x}{9}$

convert sq. ft to yds so cost of floor can be calculated

18. What will the new flooring cost the Clearys?

\$539.70