

4.1 WS 3

Use the composition of functions to determine whether f and g are inverses of one another.

1. $f(x) = -2x + 5$; $g(x) = \frac{x-5}{-2}$

2. $f(x) = \sqrt[3]{x} - 5$; $g(x) = (x+5)^3$

3. $f(x) = 4x + 1$; $g(x) = \frac{1}{2}x + \frac{1}{4}$

4. $f(x) = \frac{2x}{x-1}$; $g(x) = \frac{x}{x-3}$

Find the inverse function of the one-to-one function given.

5. $f(x) = \{(-3, 1), (-2, 2), (1, 5), (4, -7)\}$

6. $g(x) = \{(0, 1), (1, 2), (2, 4), (3, 8), (4, 16)\}$

Find the inverse of each function, then state the domain and range of $f^{-1}(x)$.

7. $f(x) = 4x - 8$

8. $f(x) = \frac{x}{x-2}$

9. $f(x) = \sqrt{x-2}$

10. $f(x) = \frac{x-7}{2x-1}$

11. The function $K(x) = 1.3x - 4.7$ converts a men's shoe size in the United States to the equivalent shoe size in the United Kingdom. Determine the function $K^{-1}(x)$ that can be used to convert a U.K. men's shoe size to its equivalent U.S. shoe size.

12. A catering service uses the function $c(x) = \frac{300+12x}{x}$ to determine the amount, in dollars, it charges per person for a sit-down dinner; where x is the number of people in attendance..

a. Find $c(30)$ and explain what it represents.

b. Find $c^{-1}(x)$.

c. Use to determine how many people attended a dinner for which the cost per person was \$15.