

Determine if the following functions are inverses using composite functions.

1. $f(x) = 3x - 7$ and $g(x) = \frac{x+7}{3}$

1. _____

2. $f(x) = 4x + 9$ and $g(x) = \frac{1}{4}x - \frac{9}{4}$

2. _____

3. $f(x) = \sqrt[3]{x+6}$ and $g(x) = x^3 + 6$

3. _____

Find the inverse of the function.

4. $f(x) = 7x + 5$

4. _____

5. $f(x) = x^2 - 8$

5. _____

6. $f(x) = x^3 + 10$

6. _____

7. $f(x) = \frac{1}{8}x^4 + 3$

7. _____

Find each of the following functions.

8. Let $f(x) = 12x^{\frac{1}{4}}$ and $g(x) = -3x^{\frac{1}{4}}$

a. $(f + g)(x)$

a. _____

b. $(f - g)(x)$

b. _____

c. $(fg)(x)$

c. _____

d. $\left(\frac{f}{g}\right)(x)$

d. _____

Find the following compositions.

9. Let $f(x) = 25x^{\frac{2}{5}}$ and $g(x) = \frac{5}{x}$

a. $(f(g(x)))$

a. _____

b. $(g(f(x)))$

b. _____

c. $(g(f(-1)))$

c. _____

10. Determine whether $f(x) = x - 4$ and $g(x) = -x + 4$ are inverse functions. Explain.

a. $f(x)$ and $g(x)$ are inverse functions because $f(x) + g(x) = 0$.

b. $f(x)$ and $g(x)$ are inverse functions because $f(g(x)) = -x$.

c. $f(x)$ and $g(x)$ are not inverse functions because $\frac{f(x)}{g(x)} = -1$.

d. $f(x)$ and $g(x)$ are not inverse functions because $f(g(x)) = -x$.