

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Find the given value.

1) Find $(f + g)(-2)$ when $f(x) = x - 5$ and $g(x) = x - 4$.

2) Find $(f - g)(-2)$ when $f(x) = x + 2$ and $g(x) = \sqrt{x - 5}$

3) Find $(f \cdot g)(5)$ when $f(x) = \frac{x}{x^2 + 6x + 8}$ and $g(x) = x + 9$.

4) Find $\left(\frac{f}{g}\right)(-4)$ when $f(x) = 2x - 6$ and $g(x) = 4x^2 + 14x + 5$.

For the given functions f and g , find the requested function and state its domain.

5) $f(x) = 2 - 5x$; $g(x) = -9x + 5$
Find $f + g$.

6) $f(x) = \frac{3x - 7}{6x - 5}$; $g(x) = \frac{6x}{6x - 5}$
Find $f + g$.

7) $f(x) = \sqrt{x + 11}$; $g(x) = \frac{3}{x}$
Find $f \cdot g$.

8) $f(x) = \sqrt{x}$; $g(x) = 3x - 2$
Find $\frac{f}{g}$.

Evaluate the expression.

9) $(f \circ g)(-2)$ when $f(x) = -5x + 9$ and $g(x) = 5x^2 - 6x + 8$.

10) $(g \circ f)(3)$ when $f(x) = \frac{x - 5}{2}$ and $g(x) = 6x + 9$.

11) $(f \circ f)(3)$ when $f(x) = 3x + 4$ and $g(x) = 4x^2 - 1$

Find the composite function for the given functions.

12) $f \circ g$ for $f(x) = 9x + 7$ and $g(x) = x^2 - 4$

13) $f \circ g$ for $f(x) = \frac{5}{x - 8}$ and $g(x) = \frac{5}{7x}$

14) $g \circ f$ for $f(x) = \frac{x - 4}{7}$ and $g(x) = 7x + 4$

Find the domain of the composite function $f \circ g$.

15) $f(x) = \frac{1}{x - 4}$, $g(x) = \sqrt{x + 1}$

16) $f(x) = \frac{8}{x + 7}$, $g(x) = x + 3$

Express the given function H as a composition of two functions f and g such that $H(x) = (f \circ g)(x)$.

17) $H(x) = (-9x - 13)^2$

18) $H(x) = |5x + 5|$

19) $H(x) = \sqrt{26x^2 + 85}$

Solve the problem.

20) A balloon (in the shape of a sphere) is being inflated. The radius is increasing at a rate of 2 cm per second. Find a function, $r(t)$, for the radius in terms of t . Find a function, $V(r)$, for the volume of the balloon in terms of r . Find $(V \circ r)(t)$.

21) At Allied Electronics, production has begun on the X-15 Computer Chip. The total revenue function is given by $R(x) = 45x - 0.3x^2$ and the total profit function is given by $P(x) = -0.3x^2 + 43x - 12$, where x represents the number of boxes of computer chips produced. The total cost function, $C(x)$, is such that $C(x) = R(x) - P(x)$. Find $C(x)$.