

Function Operations

Perform the indicated operation.

1) $g(n) = n^2 + 4 + 2n$
 $h(n) = -3n + 2$
Find $(g \cdot h)(1)$

2) $f(x) = 4x - 3$
 $g(x) = x^3 + 2x$
Find $(f - g)(4)$

3) $h(x) = 3x + 3$
 $g(x) = -4x + 1$
Find $(h + g)(10)$

4) $g(a) = 3a + 2$
 $f(a) = 2a - 4$
Find $\left(\frac{g}{f}\right)(3)$

5) $g(x) = 2x - 5$
 $h(x) = 4x + 5$
Find $g(3) - h(3)$

6) $g(a) = 2a - 1$
 $h(a) = 3a - 3$
Find $(g \cdot h)(-4)$

7) $g(t) = t^2 + 3$
 $h(t) = 4t - 3$
Find $(g \cdot h)(-1)$

8) $g(n) = 3n + 2$
 $f(n) = 2n^2 + 5$
Find $g(f(2))$

9) $g(x) = -x^2 - 1 - 2x$
 $f(x) = x + 5$
Find $(g - f)(x)$

10) $f(x) = 3x - 1$
 $g(x) = x^2 - x$
Find $\left(\frac{f}{g}\right)(x)$

11) $g(a) = -3a - 3$
 $f(a) = a^2 + 5$
Find $(g - f)(a)$

12) $h(t) = 2t + 1$
 $g(t) = 2t + 2$
Find $(h - g)(t)$

13) $f(x) = 2x^3 - 5x^2$
 $g(x) = 2x - 1$
Find $(f \cdot g)(x)$

14) $h(n) = 4n + 5$
 $g(n) = 3n + 4$
Find $(h - g)(n)$

15) $g(a) = -3a^2 - a$
 $h(a) = -2a - 4$
 Find $\left(\frac{g}{h}\right)(a)$

16) $f(n) = 2n$
 $g(n) = -n - 4$
 Find $(f \circ g)(n)$

17) $h(a) = 3a$
 $g(a) = -a^3 - 3$
 Find $\left(\frac{h}{g}\right)(a)$

18) $g(n) = 2n + 3$
 $h(n) = n - 1$
 Find $(g \circ h)(n)$

19) $h(x) = x^2 - 2$
 $g(x) = 4x + 1$
 Find $(h \circ g)(x)$

20) $g(t) = 2t + 5$
 $f(t) = -t^2 + 5$
 Find $(g + f)(t)$

21) $g(x) = 2x - 2$
 $f(x) = x^2 + 3x$
 Find $(g \circ f)(-2 + x)$

22) $g(a) = a^2 - 5$
 Find $(g \circ g)\left(\frac{y}{4}\right)$

23) $g(x) = 2x + 3$
 $f(x) = 3x^2 - 3x$
 Find $-4g(-4x) + 4f(-4x)$

24) $g(t) = 3t - 1$
 $f(t) = 3t^3 + t$
 Find $(3g + 3f)(4t)$

25) $g(x) = x^3 + 3$
 $h(x) = 3x + 2$
 Find $(3g + 3h)(-x)$

26) $f(t) = t - 4$
 $g(t) = t^3 - 3$
 Find $(f \cdot g)(-2 - t)$

27) $g(t) = t^3 - 3t^2$
 $f(t) = -t - 4$
 Find $g(-2t) - f(-2t)$

28) $f(x) = 2x + 2$
 $g(x) = -3x - 1$
 Find $\left(\frac{f}{g}\right)(-4x)$

29) $f(x) = -x - 4$
 $g(x) = 2x^2 - 2$
 Find $f(-2x) - g(-2x)$

30) $g(n) = n^2 - 5n$
 $h(n) = 2n + 1$
 Find $g(y - 2) - h(y - 2)$

Function Operations

Perform the indicated operation.

1) $g(n) = n^2 + 4 + 2n$

$h(n) = -3n + 2$

Find $(g \cdot h)(1)$

-7

2) $f(x) = 4x - 3$

$g(x) = x^3 + 2x$

Find $(f - g)(4)$

-59

3) $h(x) = 3x + 3$

$g(x) = -4x + 1$

Find $(h + g)(10)$

-6

4) $g(a) = 3a + 2$

$f(a) = 2a - 4$

Find $\left(\frac{g}{f}\right)(3)$

$\frac{11}{2}$

5) $g(x) = 2x - 5$

$h(x) = 4x + 5$

Find $g(3) - h(3)$

-16

6) $g(a) = 2a - 1$

$h(a) = 3a - 3$

Find $(g \cdot h)(-4)$

135

7) $g(t) = t^2 + 3$

$h(t) = 4t - 3$

Find $(g \cdot h)(-1)$

-28

8) $g(n) = 3n + 2$

$f(n) = 2n^2 + 5$

Find $g(f(2))$

41

9) $g(x) = -x^2 - 1 - 2x$

$f(x) = x + 5$

Find $(g - f)(x)$

$-x^2 - 3x - 6$

10) $f(x) = 3x - 1$

$g(x) = x^2 - x$

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

$\frac{3x - 1}{x^2 - x}$

11) $g(a) = -3a - 3$

$f(a) = a^2 + 5$

Find $(g - f)(a)$

$-a^2 - 3a - 8$

12) $h(t) = 2t + 1$

$g(t) = 2t + 2$

Find $(h - g)(t)$

-1

13) $f(x) = 2x^3 - 5x^2$

$g(x) = 2x - 1$

Find $(f \cdot g)(x)$

$4x^4 - 12x^3 + 5x^2$

14) $h(n) = 4n + 5$

$g(n) = 3n + 4$

Find $(h - g)(n)$

$n + 1$

$$15) \begin{aligned} g(a) &= -3a^2 - a \\ h(a) &= -2a - 4 \\ \text{Find } \left(\frac{g}{h}\right)(a) \\ &= \frac{-3a^2 - a}{-2a - 4} \end{aligned}$$

$$17) \begin{aligned} h(a) &= 3a \\ g(a) &= -a^3 - 3 \\ \text{Find } \left(\frac{h}{g}\right)(a) \\ &= \frac{3a}{-a^3 - 3} \end{aligned}$$

$$19) \begin{aligned} h(x) &= x^2 - 2 \\ g(x) &= 4x + 1 \\ \text{Find } (h \circ g)(x) \\ &= 16x^2 + 8x - 1 \end{aligned}$$

$$21) \begin{aligned} g(x) &= 2x - 2 \\ f(x) &= x^2 + 3x \\ \text{Find } (g \circ f)(-2 + x) \\ &= 2x^2 - 2x - 6 \end{aligned}$$

$$23) \begin{aligned} g(x) &= 2x + 3 \\ f(x) &= 3x^2 - 3x \\ \text{Find } -4g(-4x) + 4f(-4x) \\ &= 192x^2 + 80x - 12 \end{aligned}$$

$$25) \begin{aligned} g(x) &= x^3 + 3 \\ h(x) &= 3x + 2 \\ \text{Find } (3g + 3h)(-x) \\ &= -3x^3 - 6x + 13 \end{aligned}$$

$$27) \begin{aligned} g(t) &= t^3 - 3t^2 \\ f(t) &= -t - 4 \\ \text{Find } g(-2t) - f(-2t) \\ &= -8t^3 - 12t^2 - 2t + 4 \end{aligned}$$

$$29) \begin{aligned} f(x) &= -x - 4 \\ g(x) &= 2x^2 - 2 \\ \text{Find } f(-2x) - g(-2x) \\ &= -8x^2 + 2x - 2 \end{aligned}$$

$$16) \begin{aligned} f(n) &= 2n \\ g(n) &= -n - 4 \\ \text{Find } (f \circ g)(n) \\ &= -2n - 8 \end{aligned}$$

$$18) \begin{aligned} g(n) &= 2n + 3 \\ h(n) &= n - 1 \\ \text{Find } (g \circ h)(n) \\ &= 2n + 1 \end{aligned}$$

$$20) \begin{aligned} g(t) &= 2t + 5 \\ f(t) &= -t^2 + 5 \\ \text{Find } (g + f)(t) \\ &= -t^2 + 2t + 10 \end{aligned}$$

$$22) \begin{aligned} g(a) &= a^2 - 5 \\ \text{Find } (g \circ g)\left(\frac{y}{4}\right) \\ &= \frac{176 - 32y + y^2}{16} \end{aligned}$$

$$24) \begin{aligned} g(t) &= 3t - 1 \\ f(t) &= 3t^3 + t \\ \text{Find } (3g + 3f)(4t) \\ &= 192t^3 + 40t - 3 \end{aligned}$$

$$26) \begin{aligned} f(t) &= t - 4 \\ g(t) &= t^3 - 3 \\ \text{Find } (f \cdot g)(-2 - t) \\ &= t^4 + 12t^3 + 48t^2 + 83t + 66 \end{aligned}$$

$$28) \begin{aligned} f(x) &= 2x + 2 \\ g(x) &= -3x - 1 \\ \text{Find } \left(\frac{f}{g}\right)(-4x) \\ &= \frac{-8x + 2}{12x - 1} \end{aligned}$$

$$30) \begin{aligned} g(n) &= n^2 - 5n \\ h(n) &= 2n + 1 \\ \text{Find } g(y - 2) - h(y - 2) \\ &= y^2 - 11y + 17 \end{aligned}$$