

## Function Operations

Perform the indicated operation.

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

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

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

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

$7 \cdot -1 = -7$

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

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

Find  $(h + g)(10)$ 

$h(10) + g(10)$

$33 + -39$

$-6$

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

$h(x) = 4x + 5$

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

$1 - 17$

$-16$

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

$h(t) = 4t - 3$

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

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

$4 \cdot -7 = -28$

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

$f(x) = x + 5$

Find  $(g - f)(x)$ 

$g(x) - f(x)$

$(-x^2 - 1 - 2x) - (x + 5)$

$-x^2 - 3x - 6$

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

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

Find  $(g - f)(a)$ 

$g(a) - f(a)$

$(-3a - 3) - (a^2 + 5)$

$-a^2 - 3a - 8$

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

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

Find  $(f - g)(4)$ 

$f(4) - g(4)$

$13 - 72 = -59$

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

$f(a) = 2a - 4$

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

$\frac{g(3)}{f(3)} = \frac{11}{2}$

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

$h(a) = 3a - 3$

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

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

$-9 \cdot -15 = 135$

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

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

Find  $g(f(2))$ 

$g(15) = 47$

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

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

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

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

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

$g(t) = 2t + 2$

Find  $(h - g)(t)$ 

$h(t) - g(t)$

$(2t+1) - (2t+2)$

$-1$

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

$f(x) \cdot g(x)$   
 $(2x^3 - 5x^2)(2x - 1)$   
 $4x^4 - 12x^3 + 5x^2$

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

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

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

$h(n) - g(n)$   
 $(4n + 5) - (3n + 4)$   
 $n + 1$

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

$f(-n - 4) = 2(-n - 4)$   
 $-2n - 8$

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

$\frac{h(a)}{g(a)} = \frac{3a}{-a^3 - 3}$

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

$g(n - 1) = 2(n - 1) + 3$   
 $2n + 1$

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

$h(4x + 1)$   
 $(4x + 1)^2 - 2 = 16x^2 + 8x - 1$

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

$g(t) + f(t)$   
 $(2t + 5) + (-t^2 + 5)$   
 $-t^2 + 2t + 10$

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

$g(x^2 - x - 2)$   
 $= 2(x^2 - x - 2) - 2$   
 $2x^2 - 2x - 6$   
 $g(f(-2 + x))$   
 $g((-2 + x)^2 + 3(-2 + x))$   
 $g(4 - 4x + x^2 - 6 + 3x)$

22)  $g(a) = 2a + 2$   
 $h(a) = -2a - 5$   
 Find  $(g \circ h)(-4 + a)$

$g(h(-4 + a))$   
 $g(-2(-4 + a) - 5)$   
 $g(-2a + 3)$   
 $2(-2a + 3) + 2$   
 $-4a + 8$