

Operations with Functions (including domain)

Perform the indicated operation. State the domain of each given function and the new function created by the operation.

1)
$$\begin{aligned} g(n) &= 2n^2 + 5 \\ f(n) &= 4n + 1 \\ \text{Find } g(n) - f(n) \end{aligned}$$

2)
$$\begin{aligned} g(n) &= -3n + 2 \\ f(n) &= n^2 + 3n \\ \text{Find } (g \cdot f)(n) \end{aligned}$$

3)
$$\begin{aligned} g(n) &= -4n - 1 \\ h(n) &= 2n^2 - 2n \\ \text{Find } g(n) \cdot h(n) \end{aligned}$$

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

5)
$$\begin{aligned} f(a) &= 2a - 3 \\ g(a) &= a + 1 \\ \text{Find } \left(\frac{f}{g}\right)(a) \end{aligned}$$

6)
$$\begin{aligned} g(x) &= x^2 - 2 \\ f(x) &= \sqrt{3x - 4} \\ \text{Find } (g \cdot f)(x) \end{aligned}$$

7)
$$\begin{aligned} f(x) &= x - 4 \\ g(x) &= 2x^2 - 1 \\ \text{Find } (f + g)(x) \end{aligned}$$

8)
$$\begin{aligned} g(x) &= -3x^2 - 3 \\ h(x) &= 3x + 4 \\ \text{Find } g(x) \cdot h(x) \end{aligned}$$

9)
$$\begin{aligned} g(x) &= 4x + 1 \\ f(x) &= x^2 + 4x \\ \text{Find } (g - f)(x) \end{aligned}$$

10)
$$\begin{aligned} h(n) &= n + 3 \\ g(n) &= n^3 + 1 \\ \text{Find } h(n) \div g(n) \end{aligned}$$

11)
$$\begin{aligned} h(n) &= 4n + 5 \\ g(n) &= n^2 - 3n \\ \text{Find } (h - g)(n) \end{aligned}$$

12)
$$\begin{aligned} g(x) &= x^2 + 2x \\ h(x) &= 4x - 2 \\ \text{Find } g(x) \div h(x) \end{aligned}$$

13)
$$\begin{aligned} f(n) &= n - 2 \\ g(n) &= 2n + 2 \\ \text{Find } f(n) \cdot g(n) \end{aligned}$$

14)
$$\begin{aligned} g(t) &= 2t^3 + 2 \\ h(t) &= \sqrt{t + 2} \\ \text{Find } \frac{g(t)}{h(t)} \end{aligned}$$

15)
$$\begin{aligned} h(t) &= -2t^3 - 2 \\ g(t) &= 4t + 5 \\ \text{Find } (h - g)(t) \end{aligned}$$

16)
$$\begin{aligned} f(x) &= x^2 + x \\ g(x) &= x + 3 \\ \text{Find } f(g(-5)) \end{aligned}$$

17)
$$\begin{aligned} h(t) &= 4t - 1 \\ g(t) &= t^3 - 5t \\ \text{Find } h(g(2)) \end{aligned}$$

18)
$$\begin{aligned} f(x) &= x^3 - 4x \\ g(x) &= x - 2 \\ \text{Find } (f \circ g)(-4) \end{aligned}$$

19)
$$\begin{aligned} g(t) &= t^2 - t \\ f(t) &= \sqrt{t - 5} \\ \text{Find } (g \circ f)(6) \end{aligned}$$

20)
$$\begin{aligned} h(x) &= 4x - 5 \\ g(x) &= 2x + 4 \\ \text{Find } (h \circ g)(-8) \end{aligned}$$