

## Function Operations

**Perform the indicated operation.**

$$1) \begin{aligned} f(x) &= 3x + 4 \\ g(x) &= -2x^2 - 4 \\ \text{Find } (f + g)(8) \end{aligned}$$

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

$$3) \begin{aligned} f(t) &= 2t - 3 \\ g(t) &= t^3 + t \\ \text{Find } (f \cdot g)(0) \end{aligned}$$

$$4) \begin{aligned} g(n) &= -n + 5 \\ f(n) &= n^2 - 1 \\ \text{Find } (g \circ f)(6) \end{aligned}$$

$$5) \begin{aligned} g(x) &= x + 2 \\ f(x) &= x^3 - 2x \\ \text{Find } (g \cdot f)(-4) \end{aligned}$$

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

$$7) \begin{aligned} h(x) &= -x + 5 \\ g(x) &= -3x - 2 \\ \text{Find } \left(\frac{h}{g}\right)(x) \end{aligned}$$

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

$$9) \begin{aligned} f(x) &= 2x + 5 \\ g(x) &= 2x + 3 \\ \text{Find } (f + g)(x) \end{aligned}$$

$$10) \begin{aligned} h(t) &= 2t - 2 \\ g(t) &= 4t + 4 \\ \text{Find } (h \cdot g)(t) \end{aligned}$$

$$11) \begin{aligned} g(t) &= t^2 - 2 \\ f(t) &= 4t + 4 \\ \text{Find } g(t) \div f(t) \end{aligned}$$

$$12) \begin{aligned} h(n) &= 2n + 1 \\ g(n) &= n - 2 \\ \text{Find } h(n) - 5g(n) \end{aligned}$$

$$13) \begin{aligned} g(n) &= 3n + 1 \\ h(n) &= 2n - 3 \\ \text{Find } (-4g + 5h)(-2n) \end{aligned}$$

$$14) \begin{aligned} h(n) &= 3n - 1 \\ g(n) &= 4n - 2 \\ \text{Find } (h \circ g)(4 + n) \end{aligned}$$

$$15) \begin{aligned} g(t) &= 4t + 4 \\ f(t) &= t^2 + 2t \\ \text{Find } (g - f)\left(\frac{t}{2}\right) \end{aligned}$$

$$16) \begin{aligned} g(t) &= 4t - 3 \\ f(t) &= t^3 - 2 \\ \text{Find } (g + f)(-t) \end{aligned}$$

**Find  $f$  and  $g$  so that  $h(x) = (f \circ g)(x)$ . Neither function may be the identity function  $f(x) = x$ .**

$$17) h(x) = \frac{5}{x^2} + 1$$

$$18) h(x) = (\sqrt{x} + 1)^2$$

$$19) h(x) = \sqrt{5x + 1} + 1$$

$$20) h(x) = 3^{\sqrt{x} + 1}$$

$$21) h(x) = (\sqrt{x} + 3)^2$$

$$22) h(x) = \frac{4}{x^2} + 2$$

## Function Operations

**Perform the indicated operation.**

$$1) \begin{aligned} f(x) &= 3x + 4 && -104 \\ g(x) &= -2x^2 - 4 \\ \text{Find } (f + g)(8) \end{aligned}$$

$$2) \begin{aligned} h(n) &= -n^3 - 2n && \frac{72}{7} \\ g(n) &= -2n - 1 \\ \text{Find } \left(\frac{h}{g}\right)(-4) \end{aligned}$$

$$3) \begin{aligned} f(t) &= 2t - 3 && 0 \\ g(t) &= t^3 + t \\ \text{Find } (f \cdot g)(0) \end{aligned}$$

$$4) \begin{aligned} g(n) &= -n + 5 && -30 \\ f(n) &= n^2 - 1 \\ \text{Find } (g \circ f)(6) \end{aligned}$$

$$5) \begin{aligned} g(x) &= x + 2 && 112 \\ f(x) &= x^3 - 2x \\ \text{Find } (g \cdot f)(-4) \end{aligned}$$

$$6) \begin{aligned} g(x) &= x^2 + 2 && 0 \\ h(x) &= 3x - 2 \\ \text{Find } (g + h)(-3) \end{aligned}$$

$$7) \begin{aligned} h(x) &= -x + 5 && \frac{-x + 5}{-3x - 2} \\ g(x) &= -3x - 2 \\ \text{Find } \left(\frac{h}{g}\right)(x) \end{aligned}$$

$$8) \begin{aligned} g(x) &= 4x - 2 && -x^2 + 9x - 2 \\ h(x) &= x^2 - 5x \\ \text{Find } g(x) - h(x) \end{aligned}$$

$$9) \begin{aligned} f(x) &= 2x + 5 && 4x + 8 \\ g(x) &= 2x + 3 \\ \text{Find } (f + g)(x) \end{aligned}$$

$$10) \begin{aligned} h(t) &= 2t - 2 && 8t^2 - 8 \\ g(t) &= 4t + 4 \\ \text{Find } (h \cdot g)(t) \end{aligned}$$

$$11) \begin{aligned} g(t) &= t^2 - 2 && \frac{t^2 - 2}{4t + 4} \\ f(t) &= 4t + 4 \\ \text{Find } g(t) \div f(t) \end{aligned}$$

$$12) \begin{aligned} h(n) &= 2n + 1 && -3n + 11 \\ g(n) &= n - 2 \\ \text{Find } h(n) - 5g(n) \end{aligned}$$

$$13) \begin{aligned} g(n) &= 3n + 1 && 4n - 19 \\ h(n) &= 2n - 3 \\ \text{Find } (-4g + 5h)(-2n) \end{aligned}$$

$$14) \begin{aligned} h(n) &= 3n - 1 && 12n + 41 \\ g(n) &= 4n - 2 \\ \text{Find } (h \circ g)(4 + n) \end{aligned}$$

$$15) \begin{aligned} g(t) &= 4t + 4 && \frac{4t + 16 - t^2}{4} \\ f(t) &= t^2 + 2t \\ \text{Find } (g - f)\left(\frac{t}{2}\right) \end{aligned}$$

$$16) \begin{aligned} g(t) &= 4t - 3 && -t^3 - 4t - 5 \\ f(t) &= t^3 - 2 \\ \text{Find } (g + f)(-t) \end{aligned}$$

**Find  $f$  and  $g$  so that  $h(x) = (f \circ g)(x)$ . Neither function may be the identity function  $f(x) = x$ .**

$$17) \begin{aligned} h(x) &= \frac{5}{x^2} + 1 && f(x) = \frac{5}{x} + 1 \\ &&& g(x) = x^2 \end{aligned}$$

$$18) \begin{aligned} h(x) &= (\sqrt{x} + 1)^2 && f(x) = x^2 \\ &&& g(x) = \sqrt{x} + 1 \end{aligned}$$

$$19) \begin{aligned} h(x) &= \sqrt{5x + 1} + 1 && f(x) = \sqrt{x} + 1 \\ &&& g(x) = 5x + 1 \end{aligned}$$

$$20) \begin{aligned} h(x) &= 3^{\sqrt{x} + 1} && f(x) = 3^x \\ &&& g(x) = \sqrt{x} + 1 \end{aligned}$$

$$21) \begin{aligned} h(x) &= (\sqrt{x} + 3)^2 && f(x) = x^2 \\ &&& g(x) = \sqrt{x} + 3 \end{aligned}$$

$$22) \begin{aligned} h(x) &= \frac{4}{x^2} + 2 && f(x) = \frac{4}{x} + 2 \\ &&& g(x) = x^2 \end{aligned}$$