

Evaluate each function.

$$1) f(t) = |2t| + 3; \text{ Find } f(1) \\ = 5$$

$$3) g(x) = x^2 - 3; \text{ Find } g(4) \\ = 13$$

$$5) k(x) = 2^{x+1} + 2; \text{ Find } k(0) \\ = 4$$

$$7) p(x) = |x| + 1; \text{ Find } p(-7) \\ = 8$$

$$9) h(t) = 3|t| + 1; \text{ Find } h(-7) \\ = 22$$

$$2) f(x) = x + 4; \text{ Find } f(4) \\ = 8$$

$$4) h(a) = a^2 - 2; \text{ Find } h(5) \\ = 23$$

$$6) f(a) = 3a - 5; \text{ Find } f(0) \\ = -5$$

$$8) k(x) = 3x^2 + 3; \text{ Find } k(-5) \\ = 78$$

$$10) w(x) = x + 1; \text{ Find } w(1) \\ = 2$$

Perform the indicated operation.

$$11) g(a) = 4a + 1 \\ f(a) = a^2 + 2a \\ \text{Find } g(a) - f(a) = -a^2 + 2a + 1$$

$$12) h(x) = x + 4 \\ g(x) = x + 5 \\ \text{Find } h(x) \cdot g(x) = x^2 + 9x + 20$$

$$13) f(x) = 2x - 5 \\ g(x) = 2x - 2 \\ \text{Find } (-f - 3g)(x) \\ -1[f(x)] - 3[g(x)] = -8x + 11$$

$$14) f(n) = -2n - 2 \\ g(n) = 4n - 4 \\ \text{Find } f(n) + g(n) = 2n - 6$$

$$15) g(x) = x + 5 \\ h(x) = -3x^3 + 3x \\ \text{Find } \left(\frac{g}{h}\right)(x) = \frac{x+5}{-3x^3+3x}$$

$$16) g(n) = 3n - 2 \\ h(n) = n^3 + n \\ \text{Find } (-g + 4h)(n) \\ -1(g(n)) + 4(h(n)) \\ = 4n^3 + n + 2$$

$$17) g(n) = n + 4 \\ f(n) = 3n^3 + 3n \\ \text{Find } \left(\frac{g}{f}\right)(n) = \frac{n+4}{3n^3+3n}$$

$$18) g(t) = t + 2 \\ h(t) = t^2 - 3 \\ \text{Find } (g \cdot h)(t) = t^3 + 2t^2 - 3t - 6$$

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

$$20) \begin{aligned} g(x) &= 2x \\ h(x) &= x^2 + 1 \\ \text{Find } (g \circ h)(x) &= 2x^2 + 2 \end{aligned}$$

$$21) \begin{aligned} g(x) &= x^2 - x \\ \text{Find } g(g(x)) &= x^4 - 2x^3 + x \end{aligned}$$

$$22) \begin{aligned} g(a) &= -a^2 - 3 \\ f(a) &= 4a - 3 \\ \text{Find } g(f(a)) &= -16a^2 + 24a - 12 \end{aligned}$$

$$23) \begin{aligned} f(x) &= x^2 - 2 \\ g(x) &= 3x - 3 \\ \text{Find } (f \circ g)(x) &= 9x^2 - 18x + 7 \end{aligned}$$

$$24) \begin{aligned} f(x) &= 3x - 5 \\ g(x) &= -2x^2 - 4x \\ \text{Find } f(g(x)) &= -6x^2 - 12x - 5 \end{aligned}$$

$$25) \begin{aligned} h(n) &= n + 2 \\ g(n) &= n^2 + 4n \\ \text{Find } (h \circ g)(n) &= n^2 + 4n + 2 \end{aligned}$$

$$26) \begin{aligned} g(n) &= 4n - 4 \\ \text{Find } g(g(n)) &= 16n - 20 \end{aligned}$$

Find the inverse of each function.  $f^{-1} =$

$$27) \begin{aligned} f(n) &= 3n - 3 \\ f^{-1} &= \frac{n+3}{3} \end{aligned}$$

$$x \leftrightarrow y$$

$$28) \begin{aligned} g(x) &= \frac{-20 - 8x}{5} \\ g^{-1} &= \frac{-5x - 20}{8} \end{aligned}$$

$$29) \begin{aligned} f(x) &= \frac{3}{x+2} + 2 \\ f^{-1} &= \frac{3}{x-2} - 2 \end{aligned}$$

$$30) \begin{aligned} f(x) &= \frac{1}{6}x - \frac{8}{3} \\ f^{-1} &= 6x + 16 \end{aligned}$$

$$31) \begin{aligned} h(x) &= \sqrt[3]{x+1} \\ h^{-1} &= -1 + x^3 \end{aligned}$$

$$32) \begin{aligned} f(x) &= \sqrt[3]{x+3} + 2 \\ f^{-1} &= -3 + (x-2)^3 \end{aligned}$$

$$33) \begin{aligned} f(x) &= \sqrt[5]{-x+3} \\ f^{-1} &= 3 - x^5 \end{aligned}$$

$$34) \begin{aligned} g(x) &= -\frac{5}{3}x - \frac{20}{3} \\ g^{-1} &= -4 - \frac{3x}{5} \end{aligned}$$