

Unit 6.8 Functions Compositions

Period _____

Perform the indicated operation.

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

66

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

15

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

-22

$$4) \begin{aligned} g(a) &= 4a - 4 \\ h(a) &= a - 5 \\ \text{Find } (g - 2h)(10) \end{aligned}$$

26

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

-41

$$6) \begin{aligned} h(n) &= n^2 - 4 \\ g(n) &= 3n - 4 \\ \text{Find } h(g(-1)) \end{aligned}$$

45

$$7) \begin{aligned} f(t) &= 4t + 4 \\ g(t) &= 3t + 3 \\ \text{Find } 2f(-7) - 2g(-7) \end{aligned}$$

-12

$$8) \begin{aligned} g(x) &= 2x - 5 \\ h(x) &= x^2 - 1 \\ \text{Find } g(h(0)) \end{aligned}$$

-7

$$9) \begin{aligned} g(n) &= 3n \\ h(n) &= 4n + 2 \\ \text{Find } g(h(n)) \end{aligned}$$

12n + 6

$$10) \begin{aligned} h(x) &= -x - 2 \\ \text{Find } (h \circ h)(x) \end{aligned}$$

x

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

 $-5x^2 + 26x - 9$

$$12) \begin{aligned} g(a) &= 3a + 1 \\ f(a) &= 3a^2 - 2a \\ \text{Find } (3g + f)(a) \end{aligned}$$

 $3a^2 + 7a + 3$

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

 $3x^2 - 3x + 6$

$$14) \begin{aligned} f(x) &= x^3 - 1 \\ g(x) &= 3x \\ \text{Find } (5f - 2g)(x) \end{aligned}$$

 $5x^3 - 6x - 5$

15) $h(x) = 4x - 1$
 $g(x) = x^2 + 2x$
 Find $(5h + 4g)(x)$
 $4x^2 + 28x - 5$

16) $g(t) = t^2 - 1$
 $h(t) = 4t + 1$
 Find $g(h(t))$
 $16t^2 + 8t$

17) $h(t) = 2t + 1$
 $g(t) = -2t^2 - 4$
 Find $2h(t) - 5g(t)$
 $10t^2 + 4t + 22$

18) $h(a) = 3a + 2$
 $g(a) = 4a - 3$
 Find $h(g(a))$
 $12a - 7$

19) $h(x) = 3x + 3$
 $g(x) = 4x + 3$
 Find $(3h - 5g)\left(\frac{x}{2}\right)$
 $-\frac{11}{2}x - 6$

20) $h(x) = -3x - 2$
 $g(x) = 3x - 1$
 Find $h(g(-3x))$
 $27x + 1$

21) $h(x) = x + 2$
 Find $h\left(h\left(\frac{x}{4}\right)\right)$
 $\frac{1}{4}x + 4$

22) $h(x) = 3x + 4$
 $g(x) = x^2 + 1$
 Find $(h \circ g)(x^2)$
 $3x^4 + 7$

23) $f(t) = -t - 4$
 $g(t) = t^2 + 5$
 Find $(f \circ g)(3t)$
 $-9t^2 - 9$

24) $f(t) = -t + 4$
 $g(t) = t^2 - 5$
 Find $-2f(3t) + 3g(3t)$
 $27t^2 + 6t - 23$

25) $f(x) = 2x^2 + 4$
 $g(x) = 4x - 1$
 Find $(-3f - 4g)(-4x)$
 $-96x^2 + 64x - 8$

26) $g(x) = -x + 4$
 $f(x) = x^2 - 6x$
 Find $-4g(-4x) - 2f(-4x)$
 $-32x^2 - 64x - 16$

27) $g(n) = -2n + 4$
 $f(n) = 3n + 3$
 Find $g(n - 4) + 3f(n - 4)$
 $7n - 15$

28) $g(n) = -3n - 1$
 $f(n) = n^2 - 1$
 Find $(g \circ f)(-3n)$
 $-27n^2 + 2$