

Composition of Functions

Date _____ Period _____

Perform the indicated operation.

1) $f(x) = 4x + 5$
Find $f(f(-1))$

2) $f(x) = x + 5$
 $g(x) = -x^2 - 5x$
Find $f(g(-4))$

3) $g(n) = n + 1$
 $f(n) = n^2 - n$
Find $g(f(8))$

4) $g(x) = 2x$
Find $g(g(-3))$

5) $g(n) = 4n - 5$
 $h(n) = 2n + 1$
Find $g(h(8))$

6) $f(n) = n^2 + 3n$
 $g(n) = -n - 3$
Find $f(g(3))$

7) $h(a) = -2a^3 + 3a$
 $g(a) = a - 3$
Find $h(g(-1))$

8) $h(x) = -3x + 1$
 $g(x) = 4x + 3$
Find $h(g(x))$

9) $g(x) = x - 3$
 $f(x) = -2x + 2$
Find $g(f(x))$

10) $f(a) = 2a + 5$
 $g(a) = a^2 - 4$
Find $f(g(a))$

11) $g(a) = a^3 - 3a$
 $h(a) = 3a - 1$
Find $g(h(a))$

12) $g(t) = -t$
Find $g(g(t))$

13) $g(n) = 4n$
 $f(n) = 4n + 2$
Find $g(f(n))$

14) $g(x) = 3x + 3$
 $f(x) = x^3 - 3x^2$
Find $g(f(x))$

15) $f(t) = 2t - 5$
Find $f\left(f\left(\frac{n}{4}\right)\right)$

16) $h(t) = t - 5$
 $g(t) = -3t^2 - 5t$
Find $h(g(y^2))$

17) $g(t) = t^2 - 5$
 $f(t) = -3t - 4$
Find $g(f(-4t))$

18) $h(x) = 3x - 4$
 $g(x) = 2x^3 - 4x$
Find $h(g(2 + x))$

19) $g(x) = 4x - 2$
 $h(x) = x^3 - 2x^2$
Find $g(h(x - 2))$

20) $g(x) = 4x + 5$
Find $g\left(g\left(\frac{x}{3}\right)\right)$

Answers to Composition of Functions

1) 9

5) 63

9) $-2x - 1$

13) $16n + 8$

17) $144t^2 - 96t + 11$

20) $\frac{75 + 16x}{3}$

2) 9

6) 18

10) $2a^2 - 3$

14) $3x^3 - 9x^2 + 3$

18) $6x^3 + 36x^2 + 60x + 20$

3) 57

7) 116

11) $27a^3 - 27a^2 + 2$

15) $n - 15$

19) $4x^3 - 32x^2 + 80x - 66$

4) -12

8) $-12x - 8$

12) t

16) $-3y^4 - 5y^2 - 5$