

## Functions Notes

Evaluate each function.

1)  $h(n) = n + 4$ ; Find  $h(-9)$

$$h(-9) = -9 + 4$$

$$h(-9) = -5$$

2)  $h(a) = a^2 + 3$ ; Find  $h(4)$

$$h(4) = 4^2 + 3$$

$$h(4) = 16 + 3$$

$$h(4) = 19$$

3)  $w(x) = 2x + 2$ ; Find  $w(7)$

$$= 2(7) + 2$$

$$= 14 + 2$$

$$= 16$$

4)  $f(n) = n^3 + 5n^2$ ; Find  $f(3)$

$$= 3^3 + 5(3)^2$$

$$= 27 + 5(9)$$

$$= 27 + 45$$

$$= 72$$

5)  $h(a) = a^3 - 3a^2 - 2a$ ; Find  $h(6)$

$$= 6^3 - 3(6)^2 - 2(6)$$

$$= 216 - 3(36) - 12$$

$$= 216 - 108 - 12$$

$$= 96$$

6)  $g(n) = n + 3$ ; Find  $g(n-4)$

$$= (n-4) + 3$$

$$= n + -1$$

$$\text{or } n - 1$$

7)  $h(x) = -3x - 1$ ; Find  $h(x+1)$

$$= -3(x+1) - 1$$

$$= -3x + -3 - 1$$

$$= -3x - 4$$

8)  $h(x) = x + 5$ ; Find  $h(x-1)$

$$= (x-1) + 5$$

$$= x + 4$$

9)  $g(x) = x - 3$ ; Find  $g\left(\frac{x}{3}\right)$

$$= \frac{x}{3} - 3$$

10)  $f(x) = 4x - 3$ ; Find  $f(-4x)$

$$= 4(-4x) - 3$$

$$= -16x - 3$$

Perform the indicated operation.

11)  $g(a) = -3a^2 + 4 = -3(8)^2 + 4 = -188$   
 $h(a) = 4a - 2 = 4(8) - 2 = 30$   
 Find  $g(8) + h(8)$

$$\frac{-188}{30} = -6.2\bar{6}$$

12)  $g(x) = 4x - 4 = 4(-1) - 4 = -8$   
 $h(x) = x - 1 = -1 - 1 = -2$   
 Find  $(g - h)(-1)$

$$-8 - (-2) = -6$$

13)  $g(x) = x - 2 = -3 - 2 = -5$   
 $h(x) = -2x + 5 = -2(-3) + 5 = 11$   
 Find  $g(-3) + h(-3)$

$$-5 + 11 = +6$$

14)  $f(x) = 2x = 2(10) = 20$   
 $g(x) = x + 3 = 10 + 3 = 13$   
 Find  $f(10) + g(10)$

$$\frac{20}{13}$$

15)  $f(n) = n^3 + n^2 = 8^3 + 8^2 = 576$   
 $g(n) = 2n - 4 = 2(8) - 4 = 12$   
 Find  $\left(\frac{f}{g}\right)(8)$

$$\frac{576}{12} = 48$$

16)  $h(n) = n^2 + 4 = (-n)^2 + 4 = n^2 + 4$   
 $g(n) = -4n + 1 = -4(-n) + 1 = 4n + 1$   
 Find  $(h \cdot g)(-n)$

$$(n^2 + 4)(4n + 1)$$

$$4n^3 + n^2 + 16n + 4$$

17)  $g(x) = -4x - 5 = -4(x - 2) - 5 = -4x + 3$   
 $f(x) = 4x + 1 = 4(x - 2) + 1 = 4x - 7$   
 Find  $g(x - 2) - f(x - 2)$

$$(-4x + 3) - (4x - 7)$$

$$-4x + 3 - 4x + 7$$

$$-8x + 10$$

18)  $g(t) = 2t^2 + 3 = 2(n^2)^2 + 3 = 2n^4 + 3$   
 $h(t) = t - 5 = n^2 - 5$   
 Find  $(g + h)(n^2)$

$$(2n^4 + 3) + (n^2 - 5)$$

$$2n^4 + 3 + n^2 - 5$$

$$2n^4 + n^2 - 2$$

19)  $f(t) = 2t = 2(2t) = 4t$   
 $g(t) = 4t - 5 = 4(2t) - 5 = 8t - 5$   
 Find  $f(2t) - g(2t)$

$$4t - (8t - 5)$$

$$4t - 8t + 5$$

$$-4t + 5$$

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

$$\frac{2n^2 - 3}{n^2 - 2}$$