

Evaluating Functions

Example 1:

Find $f(-2)$, if $f(x) = 3x^2 - 4x$?

$f(x) = 3x^2 - 4x$; find $f(-2)$ Substitute -2 in for x in the function

$f(-2) = 3(-2)^2 - 4(-2)$ Evaluate, exponents first

$f(-2) = 3(4) - 4(-2)$ Multiply

$f(-2) = 12 + 8$ Add

$f(-2) = 20$ Our Solution

Example 2:

Find $h(4)$, if $h(x) = 3^{2x-6}$?

$h(x) = 3^{2x-6}$; find $h(4)$ Substitute 4 in for x in the function

$h(4) = 3^{2(4)-6}$ Simplify exponent, multiplying first

$h(4) = 3^{8-6}$ Subtract in exponent

$h(4) = 3^2$ Evaluate exponent

$h(4) = 9$ Our Solution

Example 3:

Find $k(-7)$, if $k(a) = 2|a + 4|$?

$k(a) = 2|a + 4|$; find $k(-7)$ Substitute -7 in for a in the function

$k(-7) = 2|-7 + 4|$ Add inside absolute values

$k(-7) = 2|-3|$ Evaluate absolute value

$k(-7) = 2(3)$ Multiply

Practice:

Evaluate each function.

11) $g(x) = 4x - 4$; Find $g(0)$

12) $g(n) = -3 \cdot 5^{-n}$; Find $g(2)$

13) $f(x) = |3x + 1| + 1$; Find $f(0)$

14) $f(x) = x^2 + 4$; Find $f(-9)$

15) $f(n) = -2|-n - 2| + 1$; Find $f(-6)$

16) $f(n) = n - 3$; Find $f(10)$

17) $f(t) = 3^t - 2$; Find $f(-2)$

18) $f(a) = 3^{a-1} - 3$; Find $f(2)$

19) $f(t) = |t + 3|$; Find $f(10)$

20) $w(x) = x^2 + 4x$; Find $w(-5)$

21) $w(n) = 4n + 3$; Find $w(2)$

22) $w(x) = -4x + 3$; Find $w(6)$

23) $w(n) = 2^{n+2}$; Find $w(-2)$

24) $p(x) = -|x| + 1$; Find $p(5)$

25) $p(n) = -3|n|$; Find $p(7)$

27) $p(t) = -t^3 + t$; Find $p(4)$

29) $k(n) = |n - 1|$; Find $k(3)$

26) $k(a) = a + 3$; Find $k(-1)$

28) $k(x) = -2 \cdot 4^{2x-2}$; Find $k(2)$

30) $p(t) = -2 \cdot 4^{2t+1} + 1$; Find $p(-2)$

Operations on Functions:**Perform the indicated operations.**

1) $g(a) = a^3 + 5a^2$
 $f(a) = 2a + 4$
Find $g(3) + f(3)$

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

5) $g(x) = x + 3$
 $f(x) = -x + 4$
Find $(g - f)(3)$

7) $g(x) = x^2 + 2$
 $f(x) = 2x + 5$
Find $(g - f)(0)$

9) $g(t) = t - 3$
 $h(t) = -3t^3 + 6t$
Find $g(1) + h(1)$

11) $h(t) = t + 5$
 $g(t) = 3t - 5$
Find $(h \cdot g)(5)$

13) $h(n) = 2n - 1$
 $g(n) = 3n - 5$
Find $h(0) \div g(0)$

2) $f(x) = -3x^2 + 3x$
 $g(x) = 2x + 5$
Find $f(-4) \div g(-4)$

4) $g(x) = 4x + 3$
 $h(x) = x^3 - 2x^2$
Find $(g - h)(-1)$

6) $g(x) = -4x + 1$
 $h(x) = -2x - 1$
Find $g(5) + h(5)$

8) $g(x) = 3x + 1$
 $f(x) = x^3 + 3x^2$
Find $g(2) \cdot f(2)$

10) $f(n) = n - 5$
 $g(n) = 4n + 2$
Find $(f + g)(-8)$

12) $g(a) = 3a - 2$
 $h(a) = 4a - 2$
Find $(g + h)(-10)$

14) $g(x) = x^2 - 2$
 $h(x) = 2x + 5$
Find $g(-6) + h(-6)$