Evaluating Equations in Function Notation

<u>What is Function Notation:</u> **It replaces y with f(x)**

f(x) is read "f of x" or "the value of f at x"

<u>Example:</u> y = 3x + 2 becomes f(x) = 3x + 2 (mathematically nothing changes!)

<u>DIRECTIONS:</u> Evaluate the function for the given value of the variable.

1. $f(x) = 4x + 1$ $f(2) =$ $f(0) =$ $f(-2) =$	**2.** $f(x) = x^2 - 1$ $g(x) = -\frac{1}{x}$ $f(5) =$ $g(2) =$ $f(0) =$ $g(-2) =$
3. $h(x) = x^2 - 2x - 3$ $h(a) =$ $h(2m) =$ $h(1 - p) =$ $h(2a + 1) =$	**4.** $Given\ f(x) = \lvert 2x + 1 \rvert\ \ and\ \ g(x) = x^2 - x$ $f(3) =$ $f(-3) =$ $g(3) =$ $g(-3) =$ $g(2a) =$

5. $\boldsymbol{f(x) = 4x + 10}$

$\boldsymbol{f(x) = -10}$

$\boldsymbol{f(x) = -30}$

$\boldsymbol{f(x) = 18}$

6. Find the error in the students work.

$$f(x) = -3x^2 - 2x + 5$$
$$f(-2) = -3-2^2 - 2 - 2 + 5$$
$$f(-2) = -3 - 4 - 2 - 2 + 5$$
$$f(-2) = -6$$

7. For what value of x are $f(x) = 4x + 9$ and $g(x) = x^2 + 13$ equivalent?

Evaluating Equations Extra Practice

Evaluate the function for the given value of the variable.

1. If $f(x) = 3x + 4$, $Find\ f(2)$

2. If $f(x) = -\sqrt{x-3}$, $Find\ f(19)$

3. If $h(x) = |x - 4|$, $Find\ h(-6)$

4. If $g(x) = 3x^3$, $Find\ g(-2)$

5. If $f(x) = 2x^2 - 2$, $Find\ f(2 - a)$

6. If $h(x) = (x-2)^2 + 2$, $Find\ h(2b)$

7. If $g(x) = 2x^2 - x$, $Find\ g(m - 2)$

8. If $f(x) = \frac{1}{2x+3}$, $Find\ f(4n^2)$

9. $If\ f(x) = 5x - 15$

   $find\ x\ if\ f(x) = 10$

10. $If\ f(x) = x^2 - 10$

    $find\ x\ if\ f(x) = 26$

11. $If\ f(x) = 3x^2 - 12$

    $find\ x\ if\ f(x) = 23$

Evaluate each function. Check your work against the answers on the back.

1) $g(x) = x^2 + 2x$; Find $g(-5)$

2) $h(n) = -4^{n+1}$; Find $h(2)$

3) $h(t) = 2|t - 2|$; Find $h(-7)$

4) $g(x) = 2x - 2$; Find $g(-10)$

5) $g(n) = 2^{n+3} - 2$; Find $g(0)$

6) $h(n) = -n^2 + 3n$; Find $h(6)$

7) $p(t) = 2t$; Find $p(-4t)$

8) $p(n) = n^2 - 2n$; Find $p(4n)$

9) $f(x) = 2^{2x+2}$; Find $f(x+1)$

10) $g(n) = 2^{-n-1} - 1$; Find $g(3n)$

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

12) $g(x) = x - 4$; Find $g(-4x)$

Answers to Evaluating Functions Algebraically

1) $g(-5) = 15$
2) $h(2) = -64$
3) $h(-7) = 18$
4) $g(-10) = -22$
5) $g(0) = 6$
6) $h(6) = -18$
7) $p(-4t) = -8t$
8) $p(4n) = 16n^2 - 8n$
9) $f(x+1) = 2^{2x+4}$
10) $g(3n) = 2^{-3n-1} - 1$
11) $3a^2 - 18a + 30$
12) $g(-4x) = -4x - 4$