Unit 6.6 Evaluating Functions NOTES

Evaluating Functions:

We have seen linear functions written in the slope-intercept form of $y = mx + b$. If we name a function f, we can write it using function notation: $f(x) = mx + b$.

The symbol $f(x)$ is another name for "y" and is read as "f of x", or "the value of f at x". It does not mean "f times x". We can also use other letters such as d or g to name a function. Functions can be represented by equations, tables, and graphs.

<u>Evaluate a function represented by an equation:</u>

Consider the function $g(x) = 8x + 2$. Evaluate the function when $x = 0$ and $x = -5$.

The values of g are the input values. To evaluate the function, we substitute x with the input values and calculate, resulting in the output values.

Given: $g(x) = 8x + 2$. Find $g(0)$ and $g(-5)$.

Solution:

$$g(x) = 8x + 2 \qquad \text{Write original function.}$$
$$g(0) = 8(0) + 2 \qquad \text{Substitute 0 for } x$$
$$g(0) = 0 + 2 \qquad \text{Multiply}$$
$$g(0) = 2 \qquad \text{Simplify}$$

Solution:

$$g(x) = 8x + 2 \qquad \text{Write original function}$$
$$g(-5) = 8(-5) + 2 \qquad \text{Substitute -5 for } x$$
$$g(-5) = -40 + 2 \qquad \text{Multiply}$$
$$g(-5) = -38 \qquad \text{Simplify}$$

We can also use expressions as our input values.

Given: $g(x) = 8x + 2$. Find $g(2x + 3)$

$$g(x) = 8x + 2 \qquad \text{Write original function}$$
$$g(2x + 3) = 8(2x + 3) + 2 \qquad \text{Substitute "} 2x + 3 \text{" for } x$$
$$g(2x + 3) = 16x + 24 + 2 \qquad \text{Distributive Property}$$
$$g(2x + 3) = 16x + 26 \qquad \text{Simplify}$$