Chapter 1 – Introduction to Functions

1.2 Function Notation

Learning Goal: We are learning to use function notation to represent linear and quadratic functions

Here we learn a **NEW AND IMPROVED WAY** for describing a function, algebraically. You have been using the following form for functions (in this example, for a quadratic):

$$y = 3(x-2)^2 + 1$$

A much more useful way of writing function is to use **FUNCTION NOTATION**. The above quadratic (***which we call a "function of x" because the domain is given as x-values***) can be written as:

This new notation is so useful because the "symbol"

shows **BOTH** the **DOMAIN** and the **RANGE** values. Because of that, the function notation shows us **points** on the graph of the function.

Let's do some examples (from your text on pages 23 – 24)

Example 1.2.1

4. Evaluate $f(-1)$, $f(3)$, and $f(1.5)$ for

a) $f(x) = (x-2)^2 - 1$ **b)** $f(x) = 2 + 3x - 4x^2$

Example 1.2.2

6. The graph of $y = f(x)$ is shown at the right.

a) State the domain and range of f.

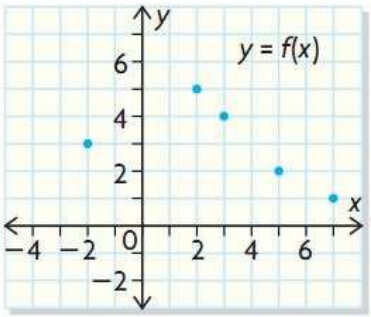
b) Evaluate.

i) $f(3)$

ii) $f(5)$

iii) $f(5 - 3)$

iv) $f(5) - f(3)$



Example 1.2.3

11. For $g(x) = 4 - 5x$, determine the input for x when the output of $g(x)$ is

a) -6 **b)** 2

Example 1.2.4

7. For $h(x) = 2x - 5$, determine

a) $h(a)$ **c)** $h(3c - 1)$

b) $h(b + 1)$ **d)** $h(2 - 5x)$

Example 1.2.5

12. A company rents cars for \$50 per day plus \$0.15/km.

a) Express the daily rental cost as a function of the number of kilometres travelled.

b) Determine the rental cost if you drive 472 km in one day.

c) Determine how far you can drive in a day for \$80.

Success Criteria:

- I can evaluate functions using function notation, by substituting a given value for x in the equation for f(x)
- I can recognize that f(x) = y corresponds to the coordinate (x, y)
- I can, given y = f(x), determine the value of x