# Course work on what similarities and differences do you see between functions and...

Life

This paper provides solutions to the discussion questions. However, some aspects of the discussion questions that needs the feedback or the response of the classmates are not included herein.

Both linear equations and functions deal with the x coordinates and y coordinates (points) on a graph. A linear equation often asks for the solution for both x and y while a function gives the value of either x or y.

## Differences

Functions are expressed by the use of symbols that represent both the output (y) and the input (x). Both the x and y forms a set of ordered pairs. Example: $y = 7x + 2$.

A linear equation is expressed by use of variables. A given linear equation can have a number of variables. Example: $9 = 7x + 2$.

The role of a linear equation is to determine the slope and the points on the line while a function gives the input and the output.

For the equations that use functions, the size (number of unknowns) is limited to either x or y. Linear equations, however, have no limited number of variables.

Are all linear equations functions? Is there an instance when a linear equation is not a function? Support your answer.

A function is defined by a linear equation. From a linear equation, a linear function can be produced. However, not all linear equations are functions.

Create an equation of a nonlinear function and provide two inputs for your classmates to evaluate.

One of the nonlinear functions is a quadratic function. A quadratic function has two roots and takes the form $f(x) = ax^2 + bx + c$. Example of an equation of a nonlinear function is $f(x) = 2x^2 + 5$. The two inputs are $x = 0$ and $x = 2$.

What is the difference between domain and range? Describe a real-life situation that could be modeled by a function.

Domain is defined as the set of all possible values of the independent (x) variables. It is also defined as the set of numbers which a given function can process. On the other hand, range is the set of all possible values of the dependent (y) variables. Range is also defined as the resulting outputs from the possible inputs or the set of all possible numbers that a function can produce after processing of every domain member.

An example of a real-life situation that can be modeled by a function is the population of a given place (y) as a function of time (x), the distance travelled by a vehicle (y) as a function of time (x).

# Reference

Bittenger, M. L. and Beecher, J. A. (2007). Introductory and Intermediate Algebra. 3rd ed. Boston: Pearson-Addison Wesley.