

Functions

Recall that a point on a graph is made of values, commonly an x and y , written as an ordered pair (x, y) . When a series of points are connected they may form an image such a line, circle or curve. A function is said to exist when for every x value there exists one and only one y value. The set of the x values that are able to be used is called the domain while the set of the y values is called the range.

When examining the graph of an equation, it may be determined if the equation is a function or not by passing a vertical line through the graph. If the line passes through the graph more than one time, anywhere, then it is not a function. Generally the name of a function would be written as $f()$, with a value in the grouping. This value would be then be substituted for all the similar variables in the equation.

Example 1: Solve $f(x)$ when $x = 2$.

a.) $f(x) = 2x + 1$

b.) $f(x) = 3x + 4y + 2$

Solution

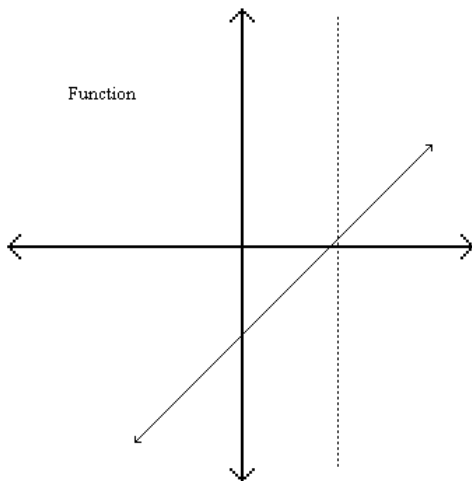
a.) $f(x) = 2x + 1$
 $f(2) = 2(2) + 1$
 $f(2) = 4 + 1$
 $f(2) = 5$

b.) $f(x) = 3x + 4y + 2$
 $f(2) = 3(2) + 4y + 2$
 $f(2) = 6 + 4y + 2$
 $f(2) = 4y + 8$

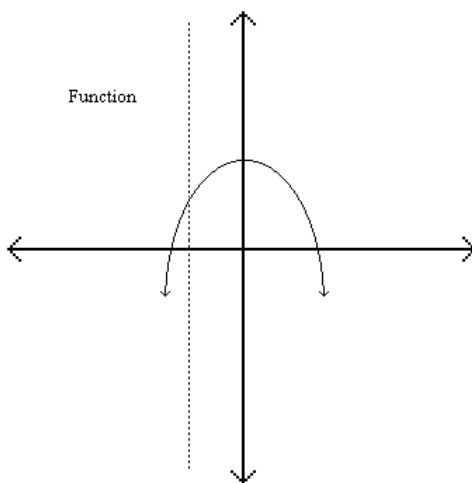
Note: Since the equations name was $f(x)$, and only x was given a value, y remains unchanged.

Example 2: Examples of the vertical line test.

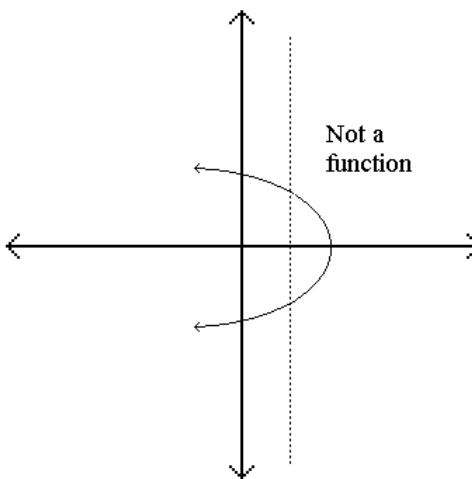
a.)



b.)

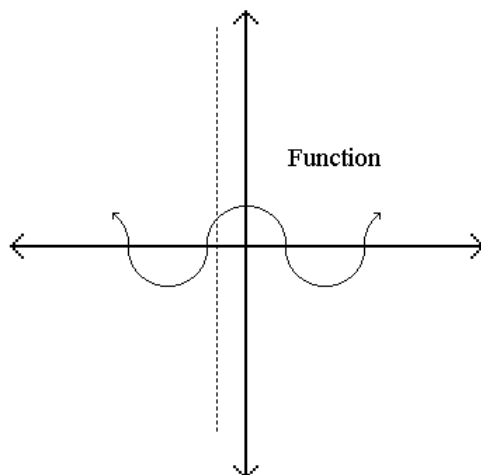


c.)



Example 2 (continued):

d.)



e.)

