Coreq Support for Section 3.3

# Topic 1: Using the Vertical Line Test

# (Video: Functions 6:43 – 11:35)

When an -coordinate is paired with more than one -coordinate, a vertical line can be drawn that will intersect the graph at more than one point. We can use this fact to determine whether a relation is also a function. We call this the **vertical line test**.

# Topic 2: Using Function Notation

# (Video: Functions 13:45 – 20:38)

Consider the linear equation . This linear equation describes a function because every -coodinate is paired with exactly one -coordinate. The variable is a function of the variable . We say the variable is the **independent variable** because any value in the domain can be assigned to . The variable is the **dependent variable** because its value depends on .

The symbol means function of and is read “ of .” This notation is called **function notation**. The equation can be written as using function notation. These equations have the same meaning. In other words,

The notation means replace with and find the resulting or function value.

Since , we know the ordered pair is a point on the graph of the linear function .

# Topic 3: Determining the Domain and Range of a Function from its Graph

**Topic 4: Sketching the Graphs of Linear Functions**

A linear function has the form where is the slope of the line and represents the *y­-*coordinate of the *y*-intercept.

The **constant function** is defined by the equation , the graph of which is a horizontal line.

The **identity function** defined by is another linear function with and .