

Study Guide

Equations of a Line 02/29/2012

Equations of a Line

Every line on any coordinate graph has a corresponding equation which describes every point on the line. Every linear equation (equation of the line) contains a slope. The slope of a line is the same between any two points on the line.

Before you can find the equation of a line, you must first be able to find the slope of a line when given two coordinate points on the line. These two points are named: (x_1, y_1) and (x_2, y_2) . The formula for the slope of a line follows.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Example 1: Find the slope of the line between Point R (2, 4) and Point S (1, 3).

Step 1: Substitute the given coordinate points into the formula.
Step 2: Simplify the fraction.

Answer: The slope of the line is 1.

The Point-Slope form for the equation of a line:

$$y - y_1 = m(x - x_1)$$

Example 2: Use the following points to find the equation of the line.

Point T (7, -3)

Point U (-4, 6)

$$y - y_1 = m(x - x_1)$$

Step 1: Solve for the slope of the line between Point T and Point U.

Step 2: Use one of the coordinate points and the slope and substitute them into the point-slope form.

Step 2: Substitute the slope and one of the points into the point-slope form.

The equation of the line is $y - y_1 = m(x - x_1)$.