

Chapter 1 Functions and Their Graphs

Section 1.1 Lines in the Plane

Objective: In this lesson you learned how to find and use the slope of a line to write and graph linear equations.

Course Number

Instructor

Date

Important Vocabulary

Define each term or concept.

Slope

Parallel

Perpendicular

I. The Slope of a Line (Pages 3–4)

The formula for the **slope** of a line passing through the points (x_1, y_1) and (x_2, y_2) is $m =$ _____.

To find the slope of the line through the points $(-2, 5)$ and $(4, -3)$, . . .

A line whose slope is positive _____ from left to right.

A line whose slope is negative _____ from left to right.

A line with zero slope is _____.

A line with undefined slope is _____.

What you should learn

How to find the slopes of lines

II. The Point-Slope Form of the Equation of a Line (Pages 5–6)

The **point-slope form** of the equation of a line is _____
_____ s

This form of equation is best used to find the equation of a line when . . .

What you should learn

How to write linear equations given points on lines and their slopes

The **two-point form** of the equation of a line is

_____ s

The two-point form of equation is best used to find the equation of a line when . . .

Example 1: Find an equation of the line having slope -2 that passes through the point $(1, 5)$.

The approximation method used to estimate a point between two given points is called _____. The approximation method used to estimate a point that does not lie between two given points is called _____.

A **linear function** has the form _____. Its graph is a _____ that has slope _____ and a y -intercept at _____.

III. Sketching Graphs of Lines (Pages 7–8)

The **slope-intercept form** of the equation of a line is _____, where m is the _____ and the y -intercept is $(\text{____}, \text{____})$.

Example 2: Determine the slope and y -intercept of the linear equation $2x - y = 4$.

The equation of a **horizontal line** is _____. The slope of a horizontal line is _____. The y -coordinate of every point on the graph of a horizontal line is _____.

The equation of a **vertical line** is _____. The slope of a vertical line is _____. The x -coordinate of every point on the graph of a vertical line is _____.

The **general form** of the equation of a line is

_____.

What you should learn
How to use slope-intercept forms of linear equations to sketch lines

Every line has an equation that can be written in _____
_____.

When a graphing utility is used to sketch a straight line, the graph of the line may not visually appear to have the slope indicated by its equation because . . .

Example 3: Use a graphing utility to graph the linear equation $2x - y = 4$ using (a) a standard viewing window, and (b) a square window.

IV. Parallel and Perpendicular Lines (Pages 9–10)

The relationship between the slopes of two lines that are parallel is . . .

The relationship between the slopes of two lines that are perpendicular is . . .

A line that is parallel to a line whose slope is 2 has slope _____.

A line that is perpendicular to a line whose slope is 2 has slope _____.

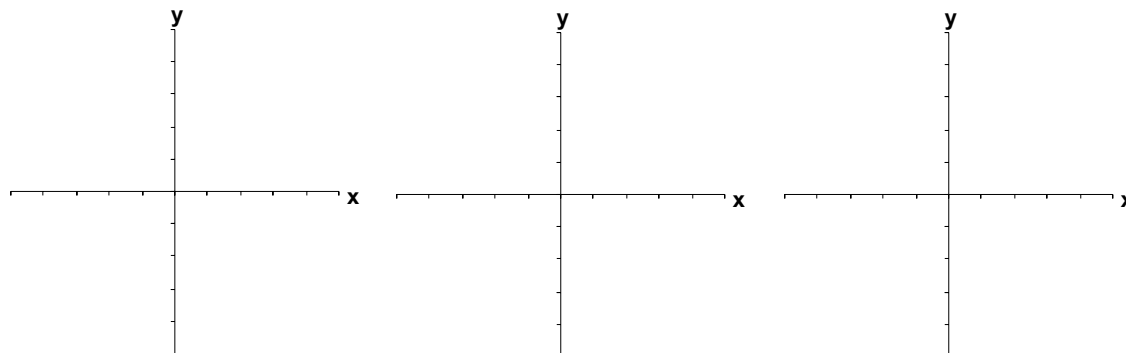
What must be done to make the graphs of two perpendicular lines appear to intersect at right angles when they are graphed using a graphing utility?

What you should learn

How to use slope to identify parallel and perpendicular lines

Example 4: Use a graphing utility to graph the perpendicular lines $y = 2x - 3$ and $y = -0.5x + 5$ using (a) a standard viewing window, and (b) a square window.

Additional notes



Homework Assignment

Page(s)

Exercises