

APPANDIX – B Coordínate Geometry and línes





The slope of a nonvertical line that passes through the points $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$ is

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

$$P_2(x_2, y_2) = \frac{y_2 - y_1}{x_2 - x_1} = rise$$



L



- The following Figure shows several lines labeled with their slopes.
- The lines with positive slope slant upward to the right.
- The lines with negative slope slant downward to the right
- The steepest lines are the ones for which the absolute value of the slope is largest.
- A horizontal line has slope 0.





Point-Slope Form of the Equation of a Line

An equation of the line passing through the point $P_1(x_1, y_1)$ and having slope m is

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

Slope-Intercept Form of the Equation of a Line

An equation of the line with slope m and y-intercept b is

y = mx + b

The Equation of every line is in the form

Ax + By + C = 0



Parallel and Perpendicular Lines

Two nonvertical lines are **parallel** if and only if they have the same slope.



Two lines with slopes m_1 and m_2 are perpendicular if and only if $m_1 m_2 = -1$ that is, their slopes are negative reciprocals: m_2 m_1 m_1 m_2



Find an equation of the line through the point (5,2) that is parallel to the line

$$4x + 6y + 5 = 0.$$



Show that the lines 2x + 3y = 1 and 6x - 4y - 1 = 0 are perpendicular.

Exercise 31:

Find an equation of the line that satisfies the given conditions

Through (4,5), parallel to the x - axis

Exercise 32:

Find an equation of the line that satisfies the given conditions Through (4,5),

parallel to the y - axis

Exercise 39:

Find the slope and *y*-intercept of the line and draw its graph

$$y = -2$$

Exercise 41:

Find the slope and *y*-intercept of the line and draw its graph

$$3x - 4y = 12$$



8,10,21,23,26,27,30,33,37,40,42