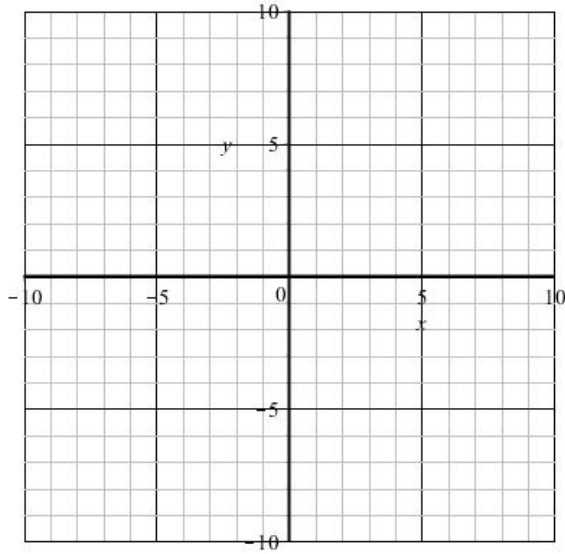


Math 1314 – College Algebra
Section 2.1-2.2 The Rectangular Coordinate Systems and Graphs/Linear
Equations in One Variable

- The Rectangular Coordinate System



- Many important models are linear, which means the graph of the model is a straight line.

- SLOPE of all non-vertical lines: $m =$

- Vertical line:

- Horizontal line:

NOTE: It does not matter which order you put the points in the formula, as long as you stay consistent.

- LINES:

■ x-intercept:

y-intercept:

Ex: What are the x -intercept and y -intercept of the line $y = 3x - 5$? Sketch.

Ex: What are the x -intercept and y -intercept of the line $3x + 6y = 24$? Sketch.

Ex: Sketch the straight line that passes through the point $(-2, 3)$ and has slope $-\frac{4}{3}$.

Ex: Find the equation of the line with slope _____ that passes through the point _____.

Ex: Find the equation of the line that passes through the points _____ and _____.

■ Parallel lines:

■ Perpendicular lines:

Ex: Find the equation of the line that passes through the point _____ that is perpendicular to the line _____.

Ex: Find the equation of the line passing through _____ that is parallel to the line passing through _____ and _____.

- Distance formula: The distance between points (x_1, y_1) and (x_2, y_2) is

Ex: Find the distance between _____ and _____.

- Midpoint formula: The midpoint of the line segment between points (x_1, y_1) and (x_2, y_2) is

Ex: If the midpoint of the line segment joining $P(-3, 2)$ and $Q(x_2, y_2)$ is $M(1, 4)$, find point Q . (NOTE: If points P and Q are on opposite sides of a circle passing through the center, then point M is the center of the circle.)