

### Section 3.1: Rectangular Coordinate Systems

#### Key Topics:

- Understand the Cartesian Plane and plotting points given by rectangular  $\{(x, y)\}$  coordinates.
- Memorize the distance formula and the formula for finding the midpoint of a line segment.
- Know and be able to apply the Pythagorean Theorem to a right triangle.

### Section 3.2: Graphs of Equations

#### Key Topics:

- Understand how to draw the graph of an equation by plotting points and analyzing the form of the equation.
- Know how to find the  $x$  and  $y$  intercepts of an equation.
- Know the definition (both graphical and algebraic) of symmetry with respect to the  $x$ -axis,  $y$ -axis and origin, and be able to test to see if a given equation has one of these types of symmetry.
- Understand how to graph a circle from its equation (perhaps after completing the square) and how to find an equation for a circle from a description of its features.

### Section 3.3: Lines

#### Key Topics:

- Understand the concept of slope and how to find the slope of a line given two points on the line.
- Memorize the three basic forms of a linear equation in two variables (general, slope/intercept, and point/slope)
- Be able to graph a line given its equation and be able to find its slope and intercepts.
- Be able to find an equation for a line by using a description of its features.
- Understand the relationship between the slopes of pairs of parallel lines and pairs of perpendicular lines.
- Understand the graphs, equations, and slopes of both vertical and horizontal lines.

### Section 3.4: Definition of Function

#### Key Topics:

- Understand the definition of a function and how to determine whether or not a given relation is a function.
- Understand evaluating functions and other computations with functions.
- Understand graphs of functions and how to find the domain and range of a function from its graph.
- Be able to find the domain of a function from its formula.
- Be able to recognize when the graph of a function is increasing, decreasing, or constant.
- Be able to solve basic application problems using linear functions.

### Section 3.7: Operations on Functions

#### Key Topics:

- Understand how to form new functions by finding the sum, difference, product, or quotient of two given functions.
- Understand both composition of functions and how to decompose a given function.
- Be able to evaluate and to find simplified formulas for combinations of functions.
- Understand how to find the domain of a combination of two functions
- Be able to find values for combinations of functions using a table of values.

**Review Problems: Chapter 3 # 3, 4, 9, 11, 14, 15, 17, 23, 25, 33, 34, 51, 55, 56, 67, 70, 71**