<p style="text-align:center">**Summary Chapter 3: Graphs and Functions**
Intermediate Algebra from OpenStax, a free and open online textbook</p>

Section 1:

Terminology
- Linear equation in two variables
- Rectangular coordinate system
- *x*-axis and *y*-axis
- Ordered Pair
- Independent Variable
- Dependent Variable
- Table of Values
- *x*-intercept and *y*-intercept

Be Able To
- Determine if given ordered pairs are solutions of linear equations in two variables
- Plot ordered pairs
- Create a table of values from an algebraic equation
- Complete table of values for linear equations in two variables
- Graph linear equation by plotting points
- Graph vertical and horizontal lines
- Find the *x*-intercept and *y*-intercept
- Apply the concepts

Section 2:

Terminology
- Slope
- Parallel lines
- Perpendicular lines

Be Able To
- Find the slope of a line
- Find the slope given two points
- Graph a line given a point and the slope
- Graph a line using the slope and *y*-intercept
- Apply the concepts

Be able to use the formula

- Slope of a line containing the points (x_1, y_1) and (x_2, y_2): $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

Section 3:

Terminology
- Slope-intercept form of an equation of a straight line
- The point-slope form of an equation of a straight line

Be Able To
- Find the equation of a line given the slope and *y*-intercept
- Find the equation of a line given one point and a slope
- Find the equation of a line given two points
- Find the equation of a line parallel to a given line
- Find the equation of a line perpendicular to a given line
- Apply the concepts

Be able to use the formulas

- Slope-Intercept form of a line: $y = mx + b$

- Point-Slope form of a line: $y - y_1 = m(x - x_1)$

Section 4:

Know The Following Definitions
- Linear inequality in two variables

Be Able To
- Verify solutions to an inequality in two variables
- Graph linear inequalities in two variables
- Apply the concepts

Section 5:

Know The Following Definitions
- Relation

Be Able To
- Determine whether a relation represents a function

- Function
- Input values
- Output values
- Domain of a function
- Range of a function
- Function notation

- Find the domain of a relation
- Find the range of a relation
- Graphs of relations
- Use function notation

Section 6:

Know The Following Definitions
- Vertical line test

Be Able To
- Apply the vertical line test
- Identify graphs of basic functions
- Apply the concepts

Sample Applications of Chapter 3 Content
- Read a graph

- Identify and interpret slope

  Example: In the linear equation $y = 2x + 4$, the slope is 2 and means that the value of y increases two units for every one unit increase in the value of x.

  Example: If x represents the number of years since a car was purchased and $y = -3200\,x + 23480$ represents the value of the car, then the slope, which is -3200, means that the value of the car is decreasing by 3200 dollars per year.

- Calculate and interpret slope

- Write linear equation and interpret slope

- Use a given formula to calculate the basal metabolic rate (BMR) for a person

  Example: $B(x) = 370 + 9.8x$ where $B(x)$ the BMR, x is the lean body mass in pounds

- Use a given formula to calculate the height of men and women based on the femur length

  Example: $H(x) = 1.88x + 32$ where $H(x)$ is the femur length for of a man, H is the man's height in inches and x is the femur length in inches

- Use a given formula to calculate a specific cost, value