Learning Module 1 - Basic Algebra Review (Appendix A)

Element 1 – Real Numbers and Operations on Polynomials (A.1, A.2)
- Use the properties of real numbers and work with subsets of the real numbers
- Determine the degree of polynomials
- Perform operations on polynomials, including addition, subtraction, and multiplication
- Solve applications involving polynomial operations

Element 2 - Factoring and Rational Expressions (A.3, A.4)
- Factor polynomials
- Perform operations on rational expressions, including addition, subtraction, multiplication, and division
- Simplify compound fractions

Element 3 – Exponents and Radicals (A.5, A.6)
- Use properties of exponents to simplify expressions
- Use scientific notation
- Solve applications involving exponents and scientific notation
- Convert between radical form and rational exponent form
- Simplify expressions using the properties of radicals
- Multiply expressions with rational exponents
- Rationalize denominators of rational expressions

Element 4 – Quadratic Equations (A.7)
- Solve quadratic equations by the square-root method
- Solve quadratic equations by factoring
- Solve quadratic equations by using the quadratic formula
- Solve applications involving quadratic equations

Learning Module 2 – Linear Equations and Graphs (Chapter 1)

Element 1 - Linear Equations and Inequalities (1.1)
- Solve linear inequalities
- Solve equations for the indicated variable
- Solve applications involving linear equations and inequalities

Element 2 - Graphs and Lines (1.2)
- Determine slope of a line
- Graph equations
Use slope-intercept, point-slope, and standard forms of a line
Find the x- and y-intercepts of the graph of a line
Write the equation of a line given a graph, given the slope and a point, or given two points
Solve applications involving graphs of linear equations

Element 3 – Linear Regression (1.3)
Solve applications involving Linear Regression
Learn to use a graphing calculator for Linear Regression

Learning Module 3 – Functions and Graphs (Chapter 2)

Element 1 – Functions (2.1)
Graph equations in two variables
Decide if a table or graph specifies a function
Evaluate functions
Find the domain of a function
Solve applications involving functions

Element 2 – Graphs and Transformations (2.2)
Find the domain and range
Use transformations to graph functions
Identify transformation of the basic elementary functions
Graph piecewise-defined functions
Solve applications involving transformations

Element 3 - Quadratic Functions (2.3)
Find and analyze the vertex form of a quadratic equation
Identify characteristics of graphs of quadratic equations
Write an equation in vertex form given the graph of a parabola
Graph functions, including using a graphing calculator
Solve applications involving quadratic functions

Element 4 - Polynomial and Rational Functions (2.4)
Analyze polynomial functions including identifying the intercepts and degree of the functions
Graph and analyze rational functions
Find equations of asymptotes
Find the equation of lowest degree that has a given graph and intercepts
Solve applications involving polynomial and rational functions
Element 5 - Exponential Functions (2.5)

- Graph exponential functions
- Use properties of exponential functions to solve equations
- Solve applications involving exponential functions

Element 6 - Logarithmic Functions (2.6)

- Change logarithmic forms to equivalent exponential forms and vice versa
- Evaluate logarithms
- Simplify logarithmic functions
- Solve logarithmic and exponential equations
- Graph logarithmic functions
- Solve applications involving logarithmic functions

Learning Module 4 – Mathematics of Finance (Chapter 3)

Element 1 – Simple Interest (3.1)

- Use the simple interest formula
- Use the formula relating present and future value
- Solve applications involving simple interest

Element 2 – Compound Interest (3.2)

- Use the compound interest formula
- Use the continuous compound interest formula
- Solve applications involving compound interest

Element 3 – Future Value; Sinking Funds (3.3)

- Use the formula for future value of an annuity
- Solve applications involving future value

Element 4 – Present Value; Amortization (3.4)

- Use the formula for present value of an annuity
- Solve applications involving present value

Learning Module 5 – Sequences and Series (Appendix B.1, B.2)

Element 1 – Sequences and Series (B.1)

- Write terms of a sequence
- Write series in expanded form and using summation notation
- Find the general term of a sequence
Solve applications involving sequences and series

**Element 2 – Arithmetic and Geometric Sequences (B.2)**
- Identify the type of a sequence or series
- Find the nth term of an arithmetic or geometric sequence
- Find the sum of an arithmetic series
- Find the sum of a geometric series
- Solve applications involving arithmetic and geometric sequences

**Learning Module 6 – Systems of Linear Equations; Matrices (Chapter 4)**

**Element 1 – Systems of Linear Equations (4.1)**
- Solve systems of linear equations by graphing
- Solve systems of linear equations by substitution
- Solve systems of linear equations by elimination
- Solve applications of systems of linear equations

**Element 2 – Augmented Matrices (4.2)**
- Identify characteristics of matrices
- Perform row operations on matrices
- Solve systems of equations using augmented matrix methods

**Element 3 – Gauss-Jordan Elimination (4.3)**
- Determine whether matrices are in reduced form
- Write linear systems corresponding to reduced augmented matrices
- Use row operations to change matrices to reduced form
- Solve systems of linear equations using Gauss-Jordan elimination
- Solve applications of systems of linear equations

**Element 4 – Matrices: Basic Operations (4.4)**
- Add or subtract matrices
- Find matrix products
- Solve matrix equations
- Solve applications involving matrix operations

**Element 5 – Inverse of a Square Matrix (4.5)**
- Determine whether matrices are inverses of one another
- Find matrix inverses
- Solve applications involving matrix inverses
Element 6 – Matrix Equations and Systems (4.6)
- Convert between systems of linear equations and matrix equations
- Solve matrix equations
- Solve systems of linear equations using matrix inverses
- Solve applications involving matrix equations

Learning Module 7 – Linear Inequalities and Linear Programming (Chapter 5)

Element 1 – Linear Inequalities in Two Variables (5.1)
- Graph linear inequalities in two variables
- Solve applications involving linear inequalities in two variables

Element 2 – Systems of Linear Inequalities (5.2)
- Solve systems of linear inequalities
- Solve applications of systems of linear inequalities

Element 3 – Linear Programming (5.3)
- Use constant-profit lines to find an optimal solution
- Solve linear programming problems
- Solve linear programming applications