Algebra 2 Honors Scope and Sequence

Unit 1 Linear Programming

- Solve systems of linear equations, graphically and algebraically
- Determine Solutions to linear programming applications

Unit 2 Complex Numbers/ Solving Quadratic

- add, subtract, multiply, and divide with complex numbers
- Solve quadratic equations with one variable using factoring, completing the square and quadratic formula
- Solve quadratic equations with complex solutions.
- Write equation in vertex form given a graph of equation in standard form
- Interpret key features and sketches of a quadratic relation from verbal descriptions including zeros, intercepts, domain, end behavior, minimums, maximums, symmetries, intervals behavior, focus, directrix
- Compare two quadratic functions, each represented in a different way fit a function to data, quadratic regression

Unit 3 Functions

- Graph and identify key features of parent functions
- Explore transformations
- Analyze functions by determining graph, domain, end behavior, minimums, maximums, symmetries, intervals behavior
- Find inverses of simple quadratic, radical, and rational

Unit 4- Polynomial Functions

- Arithmetic operations on polynomial expressions
- Classify Polynomials and interpret key features of graphs and tables, including relative Maximum and Minimum
- The Remainder and Factor Theorem
- Roots and zeros

Unit 5 Rational Expressions

- Simplifying Rational Expressions
- Operations with Rational Expressions
- Solving Rational Equations
- Graphing Rational Functions

Unit 6: Radical Functions, Equations, and Expressions

- Simplifying/Evaluating expressions with rational exponents
- Solving Radical Equations
- Graphing square and cube root functions and answering questions about the domain and range of these functions

Unit 7: Exponential and Logarithmic Expressions, Equations, and Functions

- Graphing Exponential Functions and logarithmic Functions
- Determining if a function represents Exponential Growth or Decay
- Writing exponential functions given two points
- Evaluating logs
- Change of base formula
- Solving Exponential Equations
- Solving Logarithmic Equations without using common logs
- Solving Logarithmic Equations with using common logs and your calculator
- Solving base e and natural log equations

Unit 8: Trigonometry and The Unit Circle

- Drawing a given angle in standard position (radians/degrees)
- Finding co-terminal angles (radian/degrees)
- Finding the value of trig functions given a point (x, y) on the terminal side of the angle
- Finding reference angles (radian/degrees)
- Find the value of trig functions given the value of another trig function and the quadrant
- Finding exact vales of trig functions given an angle (radians/degrees)

Unit 9: Graphing Trigonometric Functions – Sine and Cosine

- Determining the amplitude, midline, phase shift, period, and range given a Sine or Cosine function
- Graphing sine and cosine functions (radians/degrees)
- Writing functions from graphs (radians/degrees)
- Word Problems – writing a sinusoidal function from a given situation

Unit 10: Statistics and Probability

- Calculating mean, median, mode, and then determining which measure of central tendency is most appropriate for a given situation
- Normal Distribution and standard deviation
- Determining if a sample is random
- Margin of Error
- Conditional Probability
- Counting