

Honors Algebra II Course Outline:

First Semester:

1. Equations and Inequalities: representing functions, properties of real numbers, solving absolute value equations and inequalities, compound inequalities
2. Linear Relations and Functions: rate of change, graphing linear equations and absolute value equations, scatter plots and line of regression, parent functions and transformations
3. Systems of Equations and Inequalities: solving systems of equations by graphing, substitution, and elimination, optimization, linear programming
4. Quadratic Functions: graphing quadratic functions, solving quadratic equations by graphing, factoring, completing the square and the quadratic formula, complex numbers, the discriminant, quadratic inequalities
5. Polynomials and Polynomial Functions: operations with polynomials, synthetic and long division of polynomials, graphing polynomial functions, solving polynomial equations, polynomial roots and zeros, the remainder theorem, the factor theorem, the rational zero theorem
6. Inverses and Radical Functions and Relations: operations on functions, square root functions, nth roots, operations with radicals, rational exponents, radical equations and inequalities

Second Semester:

1. Exponential and Logarithmic Functions and Relations: graphing exponential functions, solving exponential equations and inequalities, logarithmic functions, solving logarithmic equations and inequalities, logarithmic properties, common and natural logarithms
2. Rational Functions and Relations: operations with rational expressions, graphing rational functions, solving rational equations and inequalities
3. Conic Sections: midpoint formula, distance formula, properties of parabolas, circles, ellipses, and hyperbolas, graphing parabolas, circles, ellipses, and hyperbolas, identifying conic sections
4. Sequences and Series: arithmetic sequences and series, geometric sequences and series, infinite geometric series, recursion, the binomial theorem, mathematical induction
5. Trigonometric Functions: unit circle, trig. functions in right triangles, angle measures, law of sines, law of cosines, circular functions, graphing trig. functions, inverse trig. functions