Prerequisites

|  |  |
| --- | --- |
| Topic | flashbacks |
| *Multiply monomials and binomials* |  |
| *factor trinomials* |  |
| *solve equations and inequalities in one variable* |  |
| *solve systems of linear equations* |  |
| *Write linear equations in standard form and slope-intercept form given two points, slope and point, or graph of the equation* |  |
| *graph a linear equation using a table of values or slope intercept form* |  |
| *find the distance and midpoint between two points in the coordinate plane* |  |
| *Use sine, cosine, and tangent to find an angle or aide of a triangle* |  |

Unit 1: The Purpose and Predictability of Patterns

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| --- | --- | --- | --- |
| Topic | Learning Targets | 03 Alg 2 | Adv Alg 2 |
| *Properties of Real Numbers/Order of Operations* |  |  | 1.1, 1.3 |
| *Use inductive reasoning to make conjectures* |  |  | 11.1 |
| nth term of arithmetic sequence |  |  | 11.2 |
| nth term of geometric sequence |  |  | 11.2 |
| find the position of a given term in a arithmetic or geometric sequence |  |  | 11.2 |
| (arithmetic and geometric means) |  |  | 11.3 |
| find the sum of arithmetic series |  |  | 11.5 |
| find sum of geometric series |  |  | 11.5 |
| (find sum of infinite geometric series) |  |  | 11.6 |
| Use sequences and series to solve real world problems |  |  | 11.7 |
| Use sigma notation to express sums |  |  | 11.4 |

Unit 2: Linear Equations and Inequalities

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| --- | --- | --- | --- |
| Topic | Learning Targets | 03 Alg 2 | Adv Alg 2 |
| Solve linear inequalities containing absolute value |  |  | supp |
| Solve compound inequalities with and /or and graph the solution set |  |  | supp |
| Solve algebraically a system containing 3 variable |  |  | 4.6 |
| Graph a system of linear inequalities to find the solution set |  |  | 4.10 |
| Solve linear programming problems |  |  | 4.11 |

Unit 3: What is a Matrix?

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| --- | --- | --- | --- |
| Topic | Learning Targets | 03 Alg 2 | Adv Alg 2 |
| Solve algebraically a system containing 3 variables |  |  | 4.6 |
| + - x matrices |  |  | supp |
| use matrices to solve real world problems |  |  | supp |
| Calculate the determinant of a 2 x 2 or 3 x 3 matrix |  |  | 4.3, 4.9 |
| find the inverse of a 2 x 2 matrix |  |  | supp |
| Solve systems of equations using inverses and determinants |  |  | supp, 4.9 |
| use technology to perform operations with matrices, find determinants and inverses |  |  | supp |

Unit 4: Functions, Relations, and Conics

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| --- | --- | --- | --- |
| Topic | Learning Targets | 03 Alg 2 | Adv Alg 2 |
| Operations with functions |  |  |  |
| Graph quadratic equations; determine domain and range |  |  |  |
| Use transformations to draw a graph and find an equation that fits a graph |  |  |  |
| Identify conics sections from their equations in standard form |  |  |  |
| Graph circles and parabolas and their translations from given equations |  |  |  |
| Determine the characteristics or circles and parabolas |  |  |  |
| Identify and write equations of circles and parabolas from given characteristics and graphs |  |  |  |
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Unit 5: Quadratic Equations, Inequalities, and Functions

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| Topic | Learning Targets | 03 Alg 2 | Adv Alg 2 |
| Complex numbers and their conjugates |  |  |  |
| Add sub mult div complex numbers |  |  |  |
| Solve quadratic equations and inequalities (complete the square, quadratic formula, etc.) |  |  |  |
| Using the discriminant to determine the number and type of solutions |  |  |  |
| Solve quadratic equations with complex solutions |  |  |  |
| Solve quadratic systems graphically and algebraically |  |  |  |
| Use transformations to draw a graph and find an equation that fits a graph |  |  |  |
| Graph a system of quadratic inequalities to find the solution set |  |  |  |

Unit 6: Polynomials

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| Topic | Learning Targets | 03 Alg 2 | Adv Alg 2 |
| Evaluate/simplify polynomial expressions/equations |  |  |  |
| Factor polynomials using a variety of methods |  |  |  |
| Determine the number and type of rational zeros for a polynomial function |  |  |  |
| Find all rational zeros for a polynomial function |  |  |  |
| recognize the relationship among zeros, x-intercepts, factors, and solutions of polynomial equations |  |  |  |
| Use technology to graph the function, approximate zeros, minimum, maximum, domain and range of the polynomial function |  |  |  |

Unit 7: Rational and Radical Expressions and Equations

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| Topic | Learning Targets | 03 Alg 2 | Adv Alg 2 |
| + - x / rational function, determine domain |  |  |  |
| solve mathematical and real world rational equation problems |  |  |  |
| (graph rational functions) |  |  |  |
| Simplify radicals |  |  |  |
| Rational exponents |  |  |  |
| + - x / radical function, determine domain |  |  |  |
| rationalize denominators of radical functions and find the common denominator |  |  |  |
| Evaluate expressions and solve equations containing nth roots or rational exponents |  |  |  |
| Evaluate and solve radical equations including real world |  |  |  |

Unit 8: Exponential and Logarithmic Equations

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| --- | --- | --- | --- |
| Topic | Learning Targets | 03 Alg 2 | Adv Alg 2 |
| Graph exponential functions |  |  |  |
| Graph logarithmic functions |  |  |  |
| Convert exponential form to logarithmic form and vice versa |  |  |  |
| Determine domain and range for exponential and logarithmic functions |  |  |  |

Unit 9: Trigonometry

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| --- | --- | --- | --- |
| Topic | Learning Targets | 03 Alg 2 | Adv Alg 2 |
| Law of Sines |  |  | 15.4, 15.5 |
| Law of Cosines |  |  | 15.2 |
| Unit Circle and trig values of angles |  |  |  |
| Radian measure and standard position |  |  |  |
| Graphing Sine and Cosine Functions |  |  |  |
| Domain and Range of Sine and Cosine Functions |  |  |  |
| Amplitude and Period of Sine and Cosine Functions |  |  |  |
| Modeling with Sine, Cosine and Tangent Functions |  |  |  |

Unit 10: Probability and Data Analysis

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| Topic | Learning Targets | 03 Alg 2 | Adv Alg 2 |
| Fundamental Counting Principle |  |  | 12.3 |
| Combinations and Permutations |  |  | 12.4, 12.5 |
| Probability of Mutually exclusive and Non-mutually exclusive evens |  |  |  |
| Probability of independent and dependent events |  |  |  |
| Probability using unions, intersections, and complements |  |  | 12.6 |
| Conditional Probability |  |  |  |