



General Information

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| Course <i>Pre-AP Algebra II</i> | Grade <i>10th or 11th Grade</i> |
| Stakeholders School staff members, students, families, and community members | |

General Unit Information

| Unit Name | Introduction to Algebra II | Linear Equations | Relations and Functions | Quadratic Functions | Polynomials and Polynomial Functions |
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| Pacing | 8 Days | 19 Days | 15 Days | 14 Days | 19 Days |
| Standards | | A2.A.1.7 Represent and evaluate mathematical models using systems of linear equations with a maximum of three variables. Graphing calculators or other appropriate technology may be used. | A2.F.1.1 Use algebraic, interval, and set notations to specify the domain and range of various types of functions, and evaluate a function at a given point in its domain. | A2.F.1.3 Graph a quadratic function. Identify the domain, range, x- and y-intercepts, maximum or minimum value, axis of symmetry, and vertex using various methods and tools that may include a graphing calculator or appropriate technology. | A2.F.1.5 Analyze the graph of a polynomial function by identifying the domain, range, intercepts, zeros, relative maxima, relative minima, and intervals of increase and decrease. |
| | | A2.A.1.9 Solve systems of linear inequalities in two variables, with a maximum of three inequalities; graph and interpret the solutions on a coordinate plane. Graphing calculators or other appropriate technology may be used. | A2.F.1.4 Graph exponential and logarithmic functions. Identify the domain, range, asymptotes, and x- and y-intercepts using various methods and tools that may include calculators or other appropriate technology. Recognize exponential decay and growth graphically and algebraically. | A2.N.1.2 Simplify, add, subtract, multiply, and divide complex numbers. | A2.A.2.2 Add, subtract, multiply, divide, and simplify polynomial expressions. |
| | | | A2.F.1.8 Graph piecewise functions with no more than three branches (linear, quadratic, or exponential). Analyze the function by identifying the domain, range, intercepts, and intervals for which it is increasing, decreasing, and constant using various methods and tools (e.g., graphing calculator, other appropriate technology). | A2.A.2.4 Recognize that a quadratic function has different equivalent representations [$f(x) = ax^2 + bx + c$, $f(x) = a(x - h)^2 + k$, and $f(x) = a(x - p)(x - q)$]. Identify and use the mathematical model that is most appropriate to solve problems. | A2.A.2.1 Factor polynomial expressions including, but not limited to, trinomials, differences of squares, sum and difference of cubes, and factoring by grouping, using a variety of tools and strategies. |
| | | | A2.F.1.2 Identify the parent forms of exponential, radical (square root and cube root only), quadratic, and logarithmic functions. Predict the effects of transformations [$f(x + c)$, $f(x) + c$, $f(cx)$, $cf(x)$] algebraically and graphically. | A2.A.1.1 Use mathematical models to represent quadratic relationships and solve using factoring, completing the square, the quadratic formula, and various methods (including graphing calculator or other appropriate technology). Find non-real roots when they exist. | |
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| | Inverses and Radical Functions | Exponential and Logarithmic Functions | Rational Functions | Statistics and Probability | Other/Matrices |
| | 15 Days | 21 Days | 12 Days | 15 Days | 12 Days |
| | A2.A.2.2 Add, subtract, multiply, divide, and simplify polynomial expressions. | A2.A.1.2 Use mathematical models to represent exponential relationships, such as compound interest, depreciation, and population growth. Solve these equations algebraically or graphically (including graphing calculator or other appropriate technology). | A2.A.2.3 Add, subtract, multiply, divide, and simplify rational expressions | A2.D.1.2 Collect data and use scatter plots to analyze patterns and describe linear, exponential, or quadratic relationships between two variables. | A2.N.2.1 Use matrices to organize and represent data. Identify the order (dimension) of a matrix. |

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| <p>A2.F.2.2 Combine functions by composition and recognize that $g(x) = f^{-1}(x)$, the inverse function of $f(x)$, if and only if $f(g(x)) = g(f(x)) = x$.</p> | <p>A2.A.3.2 Recognize that geometric sequences are exponential using equations, tables, graphs, and verbal descriptions. Given the formula $f(x) = a(r)^x$, find the next term and define the meaning of a and r within the context of the problem.</p> | <p>A2.F.1.6 Graph a rational function and identify the domain (including holes), range, x- and y-intercepts, vertical and horizontal asymptotes, using various methods and tools that may include a graphing calculator or other appropriate technology (excluding slant or oblique asymptotes).</p> | <p>A2.D.2.1 Evaluate reports by making inferences, justifying conclusions, and determining appropriateness of data collection methods. Show how graphs and data can be distorted to support different points of view.</p> | <p>A2.N.2.2 Use addition, subtraction, and scalar multiplication of matrices to solve problems</p> |
| <p>A2.F.2.3 Find and graph the inverse of a function, if it exists, in mathematical models. Know that the domain of a function f is the range of the inverse function f^{-1} and the range of the function f is the domain of the inverse function f^{-1}.</p> | <p>A2.F.1.2 Identify the parent forms of exponential, radical (square root and cube root only), quadratic, and logarithmic functions. Predict the effects of transformations $[f(x + c), f(x) + c, f(cx), cf(x)]$ algebraically and graphically.</p> | <p>A2.A.1.3 Solve one-variable rational equations and check for extraneous solutions.</p> | <p>A2.D.1.1 Use the mean and standard deviation of a data set to create a normal distribution (bell-shaped curve).</p> | |
| <p>A2.F.1.7 Graph a radical function (square root and cube root only). Identify the domain, range, and x- and y-intercepts using various methods and tools that may include a graphing calculator or other appropriate technology.</p> | <p>A2.A.3.3 Solve problems that can be modeled using arithmetic sequences or series given the nth terms and sum formulas. Graphing calculators or other appropriate technology may be used.</p> | | <p>A2.D.1.3 Make predictions based upon the regression equation (linear, exponential, or quadratic), and use the correlation coefficient to assess the reliability of those predictions using graphing technology.</p> | |
| | <p>A2.A.1.6 Solve common and natural logarithmic equations using the properties of logarithms.</p> | | <p>A2.D.2.3 Differentiate between correlation and causation when describing the relationship between two variables.</p> | |