

Hickman County Curriculum Map

Advanced Algebra with Trigonometry 3124

Second Nine Weeks

Course Level Expectations	Checks for Understanding	Student Performance Indicator(s)
<p>CLE 3113.1.1 Use mathematical language, symbols, definitions, proofs and counterexamples correctly and precisely in mathematical reasoning.</p> <p>CLE 3113.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including testing cases, estimation, and then checking induced errors and the reasonableness of the solution.</p> <p>CLE 3113.1.3 Develop inductive and deductive reasoning to independently make and evaluate mathematical arguments and construct appropriate proofs; include various types of reasoning, logic, and intuition.</p> <p>CLE 3113.1.4 Move flexibly between multiple representations (contextual, physical, written, verbal, iconic/pictorial, graphical, tabular, and symbolic), to solve problems, to model mathematical ideas, and to communicate solution strategies.</p> <p>CLE 3113.1.5 Recognize and use</p>	<p>3124.1.1 Give a sequence of algebraic or mathematical reasons to establish the validity of a simple numerical property or relationship.</p> <p>3124.1.2 Use algebraic properties to develop a valid sequence of mathematical statements.</p> <p>3124.1.3 Derive and apply the formulas for the area of the triangle and the sector of a circle.</p> <p>3124.1.4 Organize and display data in a spreadsheet in order to recognize patterns and solve problems.</p> <p>3124.1.5 Conduct simple experiments or investigations to collect non-linear data to answer questions of interest and to identify a particular model function from a family of functions.</p> <p>3124.1.6 Analyze situations, develop mathematical models, or solve problems using linear, quadratic, exponential, or logarithmic equations or inequalities symbolically or graphically.</p> <p>3124.1.7 Make inferences or predictions using an algebraic model of a situation.</p> <p>3124.1.8 Draw qualitative graphs of functions and describe their general shape/trend.</p>	

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<p>mathematical ideas and processes that arise in different settings, with an emphasis on formulating a problem in mathematical terms, interpreting the solutions, mathematical ideas, and communication of solution strategies.</p> <p>CLE 3113.1.6 Employ reading and writing to recognize the major themes of mathematical processes, the historical development of mathematics, and the connections between mathematics and the real world.</p> <p>CLE 3113.1.7 Use technologies appropriately to develop understanding of abstract mathematical ideas, to facilitate problem solving, and to produce accurate and reliable models.</p> <p>CLE 3124.2.1 Understand the capabilities and the limitations of calculators and computers in solving problems.</p> <p>CLE 3124.2.2 Represent, interpret or compare expressions for real numbers, including expressions utilizing exponents and logarithms.</p> <p>CLE 3124.2.3 Develop the arithmetic and properties of the complex numbers</p>	<p>3124.1.9 Use graphing calculators and computer spreadsheets to analyze qualities of a function.</p> <p>3124.1.12 Understand the different representations of a function; discuss the criteria (type of function and problem under consideration) for determining which representation is most helpful.</p> <p>3124.2.1 Use calculators appropriately; make estimations without a calculator regularly to detect potential errors.</p> <p>3124.2.3 Define the number i and perform all the arithmetic operations including division and calculating the modulus of a complex number.</p> <p>3124.2.4 Classify real numbers and order real numbers that include transcendental expressions, including roots and fractions of π and e. Discuss the problems with ordering the complex numbers in relationship to their arithmetic operations.</p> <p>3124.2.5 Demonstrate round-off error, over-flow error, and errors in mode settings (ex. Degree vs. radians) with particular examples</p> <p>3124.3.4 Determine the domain and range of a function, in interval notation, given various forms and contexts.</p> <p>3124.3.5 Explain why the graph of a function and its inverse are reflections of one another over the line $y = x$.</p>	
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<p>CLE 3124.3.2 Identify or analyze the distinguishing properties of exponential, polynomial, logarithmic, trigonometric, and rational functions from tables, graphs, and equations.</p> <p>CLE 3124.3.3 Understand how the algebraic properties of an equation transform the geometric properties of its graph.</p> <p>CLE 3124.3.4 Solve nonlinear inequalities (quadratic, trigonometric, conic, exponential, and logarithmic).</p> <p>CLE 3124.3.5 Solve problems by converting the given verbal information into an appropriate mathematical model involving equations or systems of equations; apply appropriate techniques to analyze these mathematical models; and interpret the solution obtained in written form using appropriate units of measurement.</p> <p>CLE 3124.5.1 Create scatter plots, analyze patterns and describe relationships that exist in a set of linear and non-linear paired data to make predictions.</p>	<p>3124.3.6 Identify whether a function has an inverse and when functions are inverses of each other.</p> <p>3124.3.8 Explain the relationship between the real zeros and the x-intercept of the graph of a function (polynomial, rational, exponential, logarithmic, and trigonometric).</p> <p>3124.3.10 Identify the real zeros of the graph of a function (polynomial, rational, exponential, logarithmic, trigonometric) in equation or graphical form.</p> <p>3124.3.11 Determine when a rational function is undefined; discuss the end behavior of rational functions</p> <p>3124.3.12 Determine the domain and range of a piecewise function.</p> <p>3124.3.13 For a given graph, locate maximums, minimums, increasing and decreasing intervals, and zeroes.</p> <p>3124.3.14 Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$.</p> <p>3124.3.15 Sketch the graph of a given a rational function and locate vertical, horizontal, and slant asymptotes, and holes in the graph if they exist.</p> <p>3124.3.16 Given a function, describe the transformation</p>	
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	<p>of the graph resulting from the manipulation of the algebraic properties of the equation.</p> <p>3124.3.17 Solve nonlinear inequalities by graphing (solutions in interval notation if one-variable).</p> <p>3124.3.18 Solve systems of nonlinear inequalities by graphing and with numerical (tabular) methods.</p> <p>3124.3.19 Solve real world problems that can be modeled using quadratic or exponential functions.</p> <p>3124.3.20 Graph circles and demonstrate an understanding of the relationship between their standard algebraic form and the graphical characteristics.</p> <p>3124.3.23 Demonstrate the issues of graphing circles on a calculator, including required screen settings.</p> <p>3124.3.25 Accurately and completely describe the graph of a function using mathematical terminology, including a complete analysis of informative points, intervals, domain and range, concavity, descriptions of function change such as intervals of increasing, and end behavior.</p> <p>3124.5.1 Construct a scatter plot of a set of paired data.</p> <p>3124.5.2 Explain when it is appropriate to use a regression equation to make predictions.</p> <p>3124.5.3 Find the quadratic or exponential regression</p>	
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	<p>equations for a data set using a graphing calculator, spreadsheet, and/or estimation.</p> <p>3124.5.4 Find the equation of the regression line that best fits data with a linear trend.</p> <p>3124.5.6 Use a regression equation to make predictions.</p> <p>3124.5.7 Recognize that the correlation coefficient is a number in the interval $[-1, 1]$ that measures the strength of the linear relationship between two variables.</p> <p>3124.5.8 Visually estimate the correlation coefficient (e.g., positive or negative, closer to 0, 0.5, or 1.0) of a scatterplot.</p> <p>3124.5.9 Recognize and explain the potential errors caused by extrapolating from data.</p> <p>3124.5.10 Use interpolation to calculate a new data point between two existing data points and identify potential errors.</p> <p>3124.5.11 Use extrapolation to construct new data points that fit a given trend and identify potential errors.</p>	
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