Hickman County Curriculum Map
Advanced Algebra with Trigonometry 3124
Second Nine Weeks

Course Level Expectations	Checks for Understanding	Student Performance Indicator(s)
CLE 3124.2.2 Represent, interpret or compare expressions for real numbers, including expressions utilizing exponents and logarithms. CLE 3124.3.1 Derive and use the formulas for the general term and summation of finite or infinite arithmetic and geometric series, if they exist. CLE 3124.3.2 Identify or analyze the distinguishing properties of exponential, polynomial, logarithmic, trigonometric, and rational functions from tables, graphs, and equations. CLE 3124.3.4 Solve nonlinear inequalities (quadratic, trigonometric, conic, exponential, and logarithmic). 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;	3124.1.6 Analyze situations, develop mathematical models, or solve problems using linear, quadratic, exponential, or logarithmic equations or inequalities symbolically or graphically. 3124.1.10 Discuss interpolation vs. extrapolation and the validity of the resulting estimates. 3124.1.11 Correctly use summation notation; expand and collect expressions in both finite and infinite settings. 3124.2.2 Compare exponential and logarithmic expressions. 3124.2.4 Classify real numbers and order real numbers that include transcendental expressions, including roots and fractions of pi and *e*. Discuss the problems with ordering the complex numbers in relationship to their arithmetic operations. 3124.2.5 Demonstrate round-off error, over-flow error, and errors in mode settings (ex. Degree vs. radians) with particular examples 3124.3.1 Find the sum, if it exists, of finite and infinite arithmetic series. 3124.3.2 Find the sum of an infinite geometric series	

and interpret the solution obtained in written form using appropriate units of measurement. CLE 3124.3.6 Understand the properties of conic sections whether displayed in equation or graphical form. CLE 3124.3.7 Use the binomial theorem to solve problems. CLE 3124.4.1 Understand basic right triangle trigonometry and use it to solve problems. CLE 3124.4.2 Know how the trigonometric functions can be extended to the periodic functions on the real number line, derive basic formulas of these functions, and use these functions and formulas to solve problems. CLE 3124.4.3 Solve trigonometric equations. CLE 3124.4.4 Apply trigonometric identities to rewrite expressions and solve equations. CLE 3124.4.5 Apply vectors to solve	whose common ratio, r, is in the interval $[-1, 1]$. 3124.3.3 Find the sum of a finite arithmetic series. 3124.3.7 Prove basic properties of a logarithm using properties of its inverse and apply those properties to solve problems. 3124.3.9 Find the inverse of an exponential or a logarithmic function. 3124.3.10 Identify the real zeros of the graph of a function (polynomial, rational, exponential, logarithmic, trigonometric) in equation or graphical form. 3124.3.21 From an equation in standard form, graph the appropriate conic section. 3124.3.22 Graph ellipses and hyperbolas and demonstrate understanding of the relationship between their standard algebraic form and the graphical characteristics. 3124.3.24 Display all of the conic sections as portions of a cone. 3124.3.26 Use the Binomial Theorem to perform a binomial expansion. 3124.4.1 Solve problems using the fact that trigonometric ratios (sine, cosine, and tangent) stay	

real world problems. CLE 3124.4.6 Understand the measure of angles and the relationship to the circle; convert between degrees and radians. CLE 3124.4.7 Develop the measurement of arcs of circles; calculate angular and linear velocity. CLE 3124.5.2 Identify and interpret the correlation coefficient for a linear bivariate data set. CLE 3124.5.3 Examine all aspects of using regression equations to act as a model for a real world situation, including interpolation, extrapolation and validity of model.	constant in similar triangles. 3124.4.2 Apply properties of 30º-60º-90º and 45º-45º-90º right triangles and reference angles to find trigonometric ratios for the following angles (and any coterminal angles) without a calculator: 30º, 45º, 60º, 120º, 135º, 150º, 210º, 225º, 240º, 300º, 315º, 330º 3124.4.3 Be able to find trigonometric ratios of 0º, 90º, 180º, 270º (and any coterminal angles) or identify the values as undefined. 3124.4.4 Use the definitions of sine, cosine and tangent as ratios of sides in a right triangle to solve problems about lengths of sides and measures of angles. 3124.4.5 Match a trigonometric equation with its graph. 3124.4.6 Know that the trigonometric functions sine, cosine, and tangent can be extended to periodic functions on the real number line. 3124.4.7 Determine the radian measure of an angle and explain how radian measurement is related to a circle of radius 1. 3124.4.8 Convert from radians to degrees and from degrees to radians.	

3124.4.9 Calculate the arc length (*s*) of a circle with radius (*r*) subtended by a central angle of measure *t* radians.

3124.4.10 Use the Law of Cosines and the Law of Sines (including the ambiguous case) to find unknown sides and angles of a triangle.

3124.4.11 Apply the Laws of Sines and Cosines to solve a non-right triangle.

3124.4.12 Know and use the following trigonometric identities in verifying other identities: Pythagorean, Reciprocal, Quotient, Sum/Difference, Double Angle

3124.4.13 Know and use the following trigonometric identities in solving trigonometric equations: Pythagorean, Reciprocal, Quotient, Sum/Difference, Double Angle

3124.4.14 Apply the Pythagorean and Reciprocal Identities to verify identities and solve equations.

3124.4.15 Multiply a vector by a scalar both algebraically and graphically.

3124.4.16 Add vectors both algebraically and graphically.

3124.4.17 Calculate magnitude and direction of a vector.

	3124.4.18 Use vectors to model velocity and direction to solve problems. 3124.4.19 Graph a trigonometric function and identify characteristics such as period, amplitude, phase shift, and asymptotes. 3124.4.20 Graph trig functions as well as their reciprocals; also, identify their key characteristics. 3124.4.21 Develop the relationship between angular velocity and linear velocity; calculate both velocities in the context of pulleys and connected wheels. 3124.5.3 Find the quadratic or exponential regression equations for a data set using a graphing calculator, spreadsheet, and/or estimation. 3124.5.5 Find the regression equation that best fits exponential data. 3124.5.6 Use a regression equation to make predictions. 3124.5.9 Recognize and explain the potential errors caused by extrapolating from data. 3124.5.10 Use interpolation to calculate a new data point between two existing data points and identify potential errors.	

	3124.5.11 Use extrapolation to construct new data points that fit a given trend and identify potential errors.	