

CURRICULUM MAP

COURSE TITLE: Algebra III	DESCRIPTION OF COURSE: Final college prep math course or preparation for trig for students needing the extra preparation. <i>to master algebra's concepts</i>
PREREQUISITES: Algebra II and Geometry	

TIME FRAME (BY WEEKS)	CONTENT	QCC #	SKILLS	ASSESSMENT
Embedded	Problem solving, reasoning, estimation	1,2,3,4 7	Selects appropriate approaches and tools and relates concepts to practical applications and other concepts. Uses appropriate values for solutions such as measurements and approximations. Uses estimating to predict results. Judges reasonableness of results Find arithmetic and geometric mean.	www.exploremath.com
2	Real numbers and polynomial review <ul style="list-style-type: none"> • Real Numbers • Exponents and radicals • Polynomials and Special Products • Factoring quadratics • Rational Expressions • Errors in Algebra and Calculus • Graphs of Data 	1 27	Simplifies algebraic expressions involving rational exponents using appropriate tools.	
2	Equations and Inequalities <ul style="list-style-type: none"> • Graphs of equations • Linear equations in one variable • Modeling with linear equations • Quadratic Equations • Complex Numbers • Other Equations • Linear inequality • Other Inequalities 	<i>in equality</i> 16 15	Solves quadratics w/ real and imaginary roots using square roots, completing the square, factoring, and quadratic formula. Use technology to check results. Defines and applies basic operations and properties of complex numbers	

TIME FRAME (BY WEEKS)	CONTENT	QCC #	SKILLS	ASSESSMENT
1.5	Functions and Their Graphs <ul style="list-style-type: none"> • Linear eq. in two variables • Functions • Analyzing graphs of functions • Transforming graphs • Combinations of functions • Inverse functions 	17 19 18 20 21 22	Defines and graphs functions: Identity, constant, absolute value, step, greatest integer, polynomial, square root, piecewise. Applies relation, function, domain, and range graphically and algebraically. Construct an equation using a parent equation or graph. Evaluates and determines composition of two functions. Finds inverse of function, domain and range, and states whether inverse is a function. Use appropriate tools to determine special relationships between functions and their inverses.	Calculator checking Vertical Line test on inverse.
2	Polynomial Functions <ul style="list-style-type: none"> • Quadratic functions • Higher Degree Polynomial Function • Polynomial and Synthetic Division • Zeros of Polynomial Functions • Mathematical Modeling 	23	Use symmetry and intercepts to graph and interpret graphs of quadratics	Matching graphs to equations.
2	Rational Functions and Conics <ul style="list-style-type: none"> • Rational functions and asymptotes • Graphs of rational functions • Partial fractions • Conics • Translations of conics 	23 24 25 26	Use symmetry, intercepts, and asymptotes to graph and interpret graphs of rational functions Identify and sketch graphs of parabolas, circle, ellipse, and hyperbola With and without center at origin Identify conic section, including degenerates as intersection of conical surface and a plane Solve systems of equations involving conics and other types	
1.5	Exponential and Logarithmic Functions <ul style="list-style-type: none"> • Exponential functions and graphs • Logarithmic functions and graphs • Properties of logs 	28 29	Defines, graphs, and shows the inverse relation between logs and exponentials Determines the values of	

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	<ul style="list-style-type: none"> • Exponential and logarithmic equations • Exponential and logarithmic models 	30 31	<p>common and natural logs and antilogs using calculator. Solves log an exp. Equations and problems.</p> <p>Solves application problems and makes predictions from collected data using regression techniques.</p>	Calculator activity
2	<p>Trigonometry</p> <ul style="list-style-type: none"> • Angles and their measures • Right triangle trigonometry • Trigonometric functions of any angle • Graphs of sine and cos functions • Graphs of other trig functions • Inverse trig functions • Applications and models 	33 35 32 34 38 39 40 36 37	<p>Converts measures of angles between radians and degrees. Sketches an angle in standard position and determines the reference and coterminal angles. Defines six trig functions as ratios of sides of right triangles. Defines trig functions as circular and as ratios of sides of right triangles</p> <p>Finds trig ratios for angles defined by a point (x,y). Graph trig functions using calc. Evaluate and graph trig functions using period, phase shift and amplitude, and vertical shift. Evaluate trig ratios for given angle in degrees or radians and find an angle when a ratio is known. Solves problems involving applications of right triangle ratios.</p>	Inaccessible distance lab
1	<p>Systems of Equations and Inequality</p> <ul style="list-style-type: none"> • Solving systems of equations • Two-variable linear systems • Multivariable linear systems • Systems of Inequalities • Linear programming 	12 14	<p>Solve systems with two to three variables using a variety graphing, substitution, linear combination, and technology. Applies linear programming strategies to solve systems of ineq. (feasible region and critical points).</p>	Profit maximization or cost analysis
1	<p>Matrices and Determinants</p> <ul style="list-style-type: none"> • Matrices and systems • Operations with matrices • Inverse of square matrix • Determinant 	9 10	<p>Add, multiply, and scalar multiply with matrices. Find determinant of 2x2 and 3x3 matrices using appropriate methods.</p>	

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	<ul style="list-style-type: none"> Applications of matrices and determinants 	11 13	Find inverse of 2x2 and 3x3 if it exists. Identifies uses of matrices in practical situations, such as arrays in organizing data in computer programming or transformations.	Tournament rankings Cryptology project
2	Sequence, Series, and Probability <ul style="list-style-type: none"> Sequence and series Arithmetic sequences and partial sums Geometric sequences and series Mathematical induction Binomial Theorem <ul style="list-style-type: none"> Counting Principles <ul style="list-style-type: none"> Probability 	5 5, 6 5 8 47 45 46	Identify arithmetic and geometric sequences. Find specified terms of sequences. Determine sequence given first term and common difference or common ratio. Find sums of first n terms of an arithmetic or geometric series. Find sum of infinite series Use Binomial Theorem to expand and simplify binomial expressions. Applies fundamental counting principal. Identifies and discriminates between permutations and combinations Finds number of permutations and number of combinations of n things taken r at a time. Distinguishes between odds, probabilities, and chance. Finds odds of given events. Find probability of an event using sample space of all possible outcomes and number of successful outcomes. Find probability of mutually exclusive events	Data collection lab
1	Statistics	41	Organize, summarize, characterize, and interpret data	

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		42 43 44	using tables, graphs, and charts of frequency distribution, histograms, line plots, stem-and-leaf plots, box plots, and scatter plots for bivariate data. Summarize data using central tendency (mean, median, mode) And variability (range, interquartile range, and standard deviation). Recognize misuses of statistics. Identify common distributions as normal distributions.	
	Analytic Trigonometry <ul style="list-style-type: none"> • Fundamental identities • Verifying identities • Solving trig equations • Sum and Difference Formulas • Multiple-Angle and Product-to-Sum 			
	Additional Trig Topics <ul style="list-style-type: none"> • Law of sines • Law of cosines • Vectors in a plane • Vectors and dot products • Trig forms of complex numbers 			