

Scope and Sequence

Mathematics

Precalculus 300

Description: Students will study functions (linear, quadratic, nth degree, rational, irrational, exponential, logarithmic, sinusoidal and parametric), sequences and series and conic sections. They will also study inverse functions, circular functions, vector spaces, the solution of triangles, the law of sines and cosines, and applications. Designed to prepare students for the study of Calculus. A Texas Instruments graphing calculator is required.

Departmental assessments are given to measure individual student, class, and grade level achievement in math. Data are collected by each teacher and used to monitor progress and make plans for instruction. At the grade level, the data are used to monitor and adjust curriculum and instruction. End of quarter, end of semester, and/or end of course exams may be used.

Unit Name/Description	Content and/or Skills
Angles and their Measures	Change from radian to degree measure and vice versa Find angles that are coterminal with a given angle Find the reference angle for a given angle Find the length of an arc, given the measure of the central angle Find the area of a sector
The Unit Circle	Find the values of the six trigonometric functions of an angle in standard position given a point on its terminal side Find the exact values for the six trigonometric functions of special angles Find the decimal approximations for the values of the six trigonometric functions of any angle

<p>Solving Triangles and Triangle Applications</p>	<p>Solve right triangles Determine whether a triangle has zero, one, or two solutions Solve triangles by using the Law of Sines Solve triangles by using the Law of Cosines Find the area of triangles Solve triangle application word problems</p>
<p>Graphs of Trigonometric Functions</p>	<p>Use graphs of the trigonometric functions Find the amplitude, period, phase shift, and sinusoidal axis for a trigonometric function Write equations of trigonometric functions given the amplitude, period, and phase shift Graph sine and cosine functions Use trigonometric functions to model periodic behavior (application problems)</p>
<p>Trigonometric Identities and Equations</p>	<p>Identify and use reciprocal identities, quotient identities, Pythagorean identities Use the basic trigonometric identities to verify other identities Find numerical values of trigonometric functions Use the sum and difference identities for sine, cosine, and tangent functions Use the double and half angle identities for the sine, cosine, and tangent functions Solve trigonometric equations</p>
<p>Midterm Exam</p>	<p>Departmental midterm review and exam</p>
<p>Algebra II Review Topics</p>	<p>Use factoring techniques including sum/product, splitting the middle term, guess and check, difference of squares and sum/difference of cubes Complete the square to rewrite quadratic functions in vertex form Evaluate and simplify expressions with rational and irrational exponents Simplify and perform operations on radical expressions Solve radical equations and higher degree polynomial equations</p>

Exploration of Basic Functions	<p>Determine whether a given relation is a function</p> <p>Identify the domain and range of any relation or function using proper notation</p> <p>Perform operations with functions</p> <p>Find composite functions</p> <p>Find and recognize inverse functions</p> <p>Determine the inverse of a relation or function</p> <p>Graph a function and its inverse</p> <p>Graph polynomial, absolute value, and radical equations</p> <p>Translate or shift polynomial, absolute value, and radical equations</p> <p>Graph and write equations of piecewise defined functions</p>
Logarithmic functions	<p>Use the properties of exponents to simplify expressions</p> <p>Evaluate expressions involving logarithms using logarithm properties</p> <p>Solve exponential equations and logarithmic equations</p> <p>Graph and recognize the inverse relationship between exponential and logarithmic functions</p> <p>Use the change of base property to evaluate logarithms</p> <p>Find natural logarithms of numbers</p> <p>Solve equations using natural logarithms</p>
Conic Sections	<p>Convert between standard and general form of circles, parabolas, ellipses, and hyperbolas</p> <p>Graph conic sections by determining vertex, foci, directrix, length of axes, and asymptotes of applicable conic sections</p>
Rational Functions	<p>Simplify rational expressions (add, subtract, multiply, divide, complex)</p> <p>Solve rational equations</p> <p>Graph rational functions by identifying discontinuities, critical points, and asymptotes</p>
Series and Sequences	<p>Identify an arithmetic or geometric sequence and finding the formula for its nth term</p> <p>Find the sum of the first n terms of arithmetic or geometric series</p> <p>Find the limit of an infinite sequence or determining that the limit does not exist</p>

	Find the sum of an infinite geometric series Represent series using sigma notation
Limits	Evaluate using pictures, tables and graphs Evaluate using the quotient theorem
Literal Equations	Solve equations for an indicated variable Express functions in terms of a specific variable using algebraic manipulations
Final Exam	Departmental final review and exam