

Course Outcomes for PreCalculus Mat 186

Course Outcomes	Outcomes Activities
1. Understand the elementary functions: linear, polynomial, power, rational, exponential, logarithmic and trigonometric	<ol style="list-style-type: none"> 1. For each function, identify the domain, range, end behavior, local behavior and average rate of change over given intervals. 2. From an equation graph each function; and from a graph or data identify an equation 3. To any function, apply transformations involving vertical and horizontal shifting and stretching/shrinking. 4. Perform symbolic manipulations for algebraic representations of the various functions <ol style="list-style-type: none"> a. Factor polynomials b. Apply rules for radicals c. Evaluate expressions with rational exponents d. Apply rules for exponents and logarithms e. Apply trigonometric formulas and identities: Pythagorean, reciprocal, sum, difference, double and half angle formulas. 5. Given an independent variable, find the dependent variable (given x find y): evaluate 6. Given a dependent variable, find all possible independent variables (given y find x): solve 7. Graph piecewise defined functions. 8. Use elementary functions to model data and solve practical problems.
2. Understand how functions can be combined or inverted to form new functions	<ol style="list-style-type: none"> 1. Find the sum, difference, product and quotient of functions 2. Compose functions 3. De-compose functions 4. Tell if a function is invertible 5. Find the inverse of a function 6. Tell whether two functions are inverses by composition 7. Graph the inverse of a function using symmetry to $y=x$
3. Understand Right Triangle Trigonometry as the invariant in similar triangles.	<ol style="list-style-type: none"> 1. Find the six trigonometric values of an acute angle, and the inverse trig values of a ratio of sides. 2. Solve triangles using right triangle trig, distinguish between the angle of depression and elevation. 3. Solve non –right triangles using the laws of sines and cosines 4. Solve applied problems using right triangle trigonometry
4. Understand complex numbers	<ol style="list-style-type: none"> 1. Add, subtract, multiply and divide complex numbers 2. Evaluate an integral power of i 3. Identify the conjugate of complex numbers
5. Understand how to solve systems of linear equations with matrices.	<ol style="list-style-type: none"> 1. Find determinants of an $n \times n$ matrix 2. Solve a system using Cramer's rule 3. Solve a system using row reduced echelon form

Technology Requirements for Math 186 Precalculus

1. Evaluate expressions and solve equations
2. Graph functions and find roots, values, extrema, and the point of intersection of two curves
3. Find the determinant of a matrix
4. Solve a system of linear equations using row reduced echelon form
5. Introduce a computer algebra system. Use the CAS to demonstrate factoring, solving, expanding and changing improper algebraic fractions

Non- core concepts: direct and inverse variation