Montclair High School
Course Syllabus

Department: Mathematics
Course: Trigonometry/Introduction to Calculus
Level: Honors
Credits: 5 credits

Course Description:
This course will provide the student with a comprehensive study of advanced mathematics in preparation for a course in Advanced Placement Calculus. The first half of the course covers trigonometry (including trig functions, graphs, identities, solving triangles), polar coordinates and sequences and series. The second half of the course will introduce students to the topics of differential calculus, including limits, continuity, the derivative and its applications.

Standards:
Prerequisites coming from Algebra and Geometry.

Anchor Text(s):

Text Title	Publisher/Author	Year/Edition	ISBN	Text Distribution
Precalculus	Pearson/Blitzer	2007/3rd Edition	0-13-195993-X	Hardcopy
Calculus and Analytical Geometry	Prentice Hall/Varberg	1992/6th Edition 2000/8th Edition	0-13-117755-9 0-13-081137-8	Hardcopy

Supplementary Materials:
Graphic calculator demonstrations
Teacher-prepared worksheets

Units of Study:
- Angles and their measure
- Circular functions
- Trig functions of special angles
- Solving triangles
- Area of triangles
- Trigonometric graphs
- Inverse trig functions and principal values
- Solving trig equations
- Verifying trig identities
- Sum, difference, double and half angle identities
- Polar coordinates and complex numbers

- Sequences and series
- Functions and limits
- Continuity
- The derivative and its applications

Proficiencies:

By the end of this course, students will:

- Understand and apply the concept of a circular function
- Graph the trig functions and their inverses
- Derive and use trig identities related to sum, difference, double angle and half angles.
- Verify trig identities
- Solve trig equations
- Solve triangles using law of sines and law of cosines and find their area
- Use trig in problem solving
- Graph and solve problems using polar coordinates
- Perform basic operations on complex numbers, both in polar and rectangular form
- Solve problems using DeMoivre's Theorem
- Solve problems concerning arithmetic and geometric sequences and series
- Graph and solve problems based on the rectangular coordinate system
- Recognize functions, domain, range, inverses, and composites, including trig functions
- Solve problems concerning limits, including one-sided limits and limits at infinity
- Determine the continuity of functions, including piecewise defined functions, step functions, and absolute value functions
- Find the derivative of a function using the definition and also by applying the rules for differentiation and by implicit differentiation.
- Find higher order derivatives
- Apply derivatives to problem-solving, including velocity and acceleration.

Evaluation & Assessment:

- Test 60%
- Quiz 30%
- Homework 10%