



Course Syllabus

COURSE TITLE: Advanced Algebra/Pre-Calculus

PREREQUISITE: Algebra II

DESCRIPTION: This course is an elective beyond the Algebra II level which prepares the student for college mathematics. Pre-Calculus students receive a bridge from Algebra II to Mathematical Analysis by being introduced to the notion of a limit. Pre-Calculus is a course for very capable mathematics students who have successfully completed the academic program through Algebra II. The objective is to provide a thorough preparation for college mathematics, especially Calculus, by including a study of trigonometry and other advanced mathematics topics.

MAIN TOPICS: Incorporate the use of technology when appropriate.

**Standards for
Mathematical Practice**

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.

Understand the subsets of the complex number system.

Review complex numbers, polynomial expressions, radicals, and exponents.

Find compositions and inverses of functions. Investigate the continuity of functions.

Solve and graph polynomial functions and inequalities.

Solve problems involving arithmetic and geometric sequences and series.

Find the limit of an algebraic function.

Solve and graph rational, logarithmic, and exponential functions.

Identify and use trigonometric ratios, inverses, and formulas.

Solve application problems using Trigonometry.

Graph the six trigonometric functions and their inverses.

Understand and apply circular functions.

Prove trigonometric identities.

Solve trigonometric equations.

CREDIT INFO: This course may provide a standard unit of credit for a Standard, Standard Technical, Advanced Technical, or Advanced Studies Diploma. Students who have successfully completed Advanced Algebra may not take this course for credit.