Course Title

Mathematical Analysis CPM (P)
«Formerly College Preparatory Mathematics ‹CPM› Math 4 (P)»

Description of Target Group

Mathematical Analysis CPM (P) is a year long course for students who have successfully completed Algebra 2 CPM 3.

Purpose

This course has been designed to move towards the goals of the new Mathematics Framework of the state and still retain the major pre calculus topics as indicated in the framework.

Standards of Expected Student Achievement

On completion of this course, students should be able to:

- Use problem-solving skills in conjunction with knowledge of the inter-connections among algebra, geometry, and functions to analyze problems and formulate appropriate solutions and to extend current knowledge by making new connections
- Visualize, express, interpret, and graph functions (and their inverses, when they exist) in various positions in two dimensions. In many cases, given the graph, be able to represent it with an equation
- Interpret the integral as a sum of areas of rectangles. Solve problems involving trigonometric functions and sinusoidal functions
- Graph polar coordinate equations
- Use basic statistical methods involving mean, median, standard deviation, z-scores and percentiles
- Given a set of data, find a line of best fit
- Perform basic operations on vectors as geometrically-defined and coordinate-defined quantities
- Use parametric equations
- Find limits of sequences and functions
- Calculate average rates of change and derivatives
- Solve problems involving conic sections and use conics for modeling data
- Communicate their mathematical ideas clearly using appropriate vocabulary
- Apply mathematics to problems in economics, biology, chemistry, and physics

Additional features will include more challenging problems for the more motivated student, SAT review questions, and multiple-choice questions to correct common algebraic misconceptions and promote precision.

In addition, students will:

1. Move away from a rule applying approach to a rule generating approach.

2. Learn to use a graphing calculator effectively and efficiently.

3. Continue to develop confidence as problem solvers, extending their use of strategies to the solution of algebra problems as well as developing new strategies such as writing equations and relating them to their graphs.

4. Become more aware of their own thinking about problems and describe their efforts both orally and in writing.

5. Develop organizational skills in study habits as well as in doing mathematics.

Instructional Materials

Text and Supplementary Materials

Refer to: <u>Secondary Adopted Texts and Approved Supplementary Books Used in the Santa Maria Joint Union High School District</u>.

Activities

This course will be presented as determined by the methods and techniques of the instructor and will utilize lecture, demonstration, group work, investigations, oral and written communication, study, drills, quizzes, and examinations.