

Monte Vista Christian School
MATH 4350, AP Calculus AB
Course Syllabus

Course Description

Our study of calculus, the mathematics of motion and change, is divided into two major topics: differential and integral calculus. Differential calculus enables us to calculate rates of change, to find the slope of a curve, and to calculate velocities and accelerations of moving bodies. Integral calculus is used to find the area of an irregular region in a plane, to measure lengths of curves, and to calculate centers of mass of arbitrary solids.

Curricular Mapping

Most AP Calculus students enter this course with knowledge of the basic mechanics of limits, derivatives, and antiderivatives. The task is to perfect each student's mechanics and to develop his or her understanding of the theory and the ability to use these ideas in applied calculus. Through additional practice of the mechanics and through the development of the applications of derivatives and antiderivatives in problem solving, each student may accomplish this task.

Course Objectives

Upon successful completion of this course, the student will be able to:

- Work effectively with the concept of limits
- Use differential Calculus to solve problems involving instantaneous rates of change.
- Use knowledge of differential Calculus to determine characteristics of graphs
- Translate verbal descriptions into equations involving derivatives and vice versa.
- Solve real life problems involving optimization.
- Compute Riemann Sums using left, right, and midpoint evaluation points.
- Compare relative magnitudes of functions and their rates of change.
- Use Integral Calculus to determine the area between two curves.
- Find the volume of solids of revolution
- Find the volume of solids with known cross sections.

Text

Course material will be available in the classroom.

Prerequisites

Students must complete precalculus and trigonometry before enrolling in this course. An A in regular precalculus or a B or higher in honors precalculus is recommended.

Course Outline

Unit One: Limits and Their Properties

Unit Two: Differentiation

Unit Three: Introduction to Integral Calculus

Fall Semester Exam: The fall semester exam includes problems from past AP exams that test the students' abilities to connect concepts graphically, analytically, numerically, and verbally. This exam determines 20% of the student's semester average while 40% of each of the first and second quarter grades makes up the rest of the semester grade.

Unit Four: Transcendental Functions

Unit Five: Applications of Integration

Unit Six: AP Review

Unit Seven: Project - Volume of a Known Cross Section Model

Final Exam covering the entire year

Grading

<u>Grade Book Categories</u>		<u>Semester Weighted Grading Configuration</u>	
Assignments and Binder	15 %	Quarter	40%
Quizzes	35 %	Quarter	40%
Tests	50 %	Final Exam	20%

Assignments

1. Notes and assignments are to be kept together. Draw a line between the end of your notes each day, and then begin your assignment below that line.
2. Students are allowed one no-penalty, day-late assignment each week.
3. Show all work in order to receive full credit. Giving "answers only" earns no credit.
4. If absent, a student is required to obtain notes, corrections, and/or other instructions from classmates.
5. Binders are due at the beginning of the period on the day of a chapter test. Please make sure your name is on the front of your binder.
6. Students can expect an average of 45 minutes of homework each day.

High School Standard Grading Policy

Please refer to the policy and procedures posted online in our Parent-Student Handbook.

Class Policies

1. From August to May, apply DISCIPLINE, DETERMINATION, and DESIRE in order to DO YOUR BEST on the AP Exam.

2. Be responsible for your attitude. We need positive, respectful encouragers to spur us toward a successful year.
3. Bring your calculus binder, pencils, red or blue pen, graphing calculator, and lined paper to class each day. (TI-84+ or TI-nspire calculators are recommended.)
4. Be seated in your desk, ready to correct your assignment, before the tardy bell rings or you will be considered tardy.

Testing Policy:

1. Being absent one day before a test does not excuse you from taking that test along with the rest of your class.
2. Calculators may not be shared on the day of a test.
3. If you are absent the day of a test, you will be expected to make up that test on the day you return to class.
4. Work must be shown in order to receive full credit.
5. This testing policy also applies to quizzes.

English Only Policy

Every student will begin each quarter with 15 English Only Assignment points. They will keep all 15 points if they always speak English in the classroom. They will lose one point per incident of speaking another language in the classroom.

School Policies and Expected Student Learning Results (ESLRs)

Students are subject to all academic policies of the school as found in the Parent-Student Handbook. Furthermore, it is each student's responsibility to read and follow all academic policies of Monte Vista Christian School. In addition to addressing each ESLR every year, we target a specific ESLR each academic year for particular focus.