



Capital School District Math Curriculum - AP Calculus

The purpose of this course is to prepare the student for college mathematics. Calculus is used to solve problems of change and motion. Topics include slopes of curves, velocities, acceleration, forces, extreme values of functions, areas, volumes. Differential and integral calculus are studied. Students are required to take AP exam in May.

Marking Period I

- Evaluate limits numerically , graphically, analytically
- Evaluate derivatives
- Apply derivatives to finding slopes, rates of change, related rates
- Evaluate difference quotients

Marking Period II

- Locate relative and absolute extrema of a function
- State and apply Rolle's and Mean Value Theorem
- Determine intervals on which a function is increasing or decreasing , or concave up or concave down
- Analyze and sketch the graph of a function
- Solve optimization problems
- Approximate the zeros of a function using Newton's Method
- Estimate errors using differentials
- Evaluate in definite and definite integrals
- Find the area of a plane region using limits
- Approximate definite integrals using Trapezoidal and Simpson's Rule

Marking Period III

- Calculate derivative and integrals of logarithmic, exponential, trigonometric functions
- Solve differential equations
- Use slope fields to approximate solutions to differential equations

Marking Period IV

- Find areas of regions between intersecting curves using integration
- Find volumes of solids of revolution using disc, shell and cross section method
- Review for AP exam
- Use integrals to find arc length, surface area, work, centers of mass, fluid pressure, and fluid force