

- **AP Calculus BC**
- **Summer Institute Outline**

This Institute will focus on the Calculus curriculum as outlined by The College Board. It will include a study of the five major components: limits, rates of change, indefinite integrals, accumulation using definite integrals, and series. Because this is a BC Calculus session, the majority of time will be spent on series, vectors, and parametric functions. We will discuss the new framework for AP Calculus as outlined by the College Board.

We will investigate the concepts using numerical, graphical, symbolic, and verbal perspectives. Concepts and lessons that promote student understanding of major ideas will be emphasized. Each participant will receive classroom-tested worksheets, programs, and activities. Special attention will be given to assessment of written student responses in light of current AP scoring standards. The TI-83/84 graphing calculator will be used for instruction. Each participant should bring his/her text and graphing calculator.

Syllabus

Day 1

Understanding by Design

- Introduction to the AP Exam
- Summer Worksheet
- Chain Rule
- Card Match
- Fundamental Theorem of Calculus
- Improper Integrals

Day 2

- Series
 - Introduction to series
 - Taylor Series and Taylor Polynomials
 - Convergence and divergence
- Tests for convergence including Absolute Convergence and the Limit Comparison Test

Day 3

- More Series
- Euler's Method
- Integration by Parts
- Logistic functions

Day 4

- Calculus with parametric functions
- Vector calculus

- Polar calculus
 - Preparing for the AP Exam
 - Looking at the 2018 exam
 - Other odds and ends