

## AP Calculus

### Knowledge Content

- Analysis of graphs
- Limits of functions
- Asymptotic and unbounded behaviour
- Continuity
- Concept and definition of derivatives
- Derivative at a point
- Derivative as a function
- Second derivative
- Computation and application of derivatives
- Integrals
- Interpretations and properties of definite integrals
- Fundamentals Theorem of Calculus
- Techniques of antiderivatives
- Applications of antiderivatives
- Numerical approximation to definite integrals.

### Skills Content

#### Students should be able to:

- Work with functions represented in a variety of ways and understand their connections
- Understand the meaning of the derivative in terms of a rate of change
- Use derivatives to solve a variety of problems
- Understand the meaning of the definite integral and use integrals to solve problems
- Identify the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus
- Communicate mathematics both orally and written, and explain solutions to problems
- Model a written description of a physical situation with a function, a differential equation, or an integral
- Use technology to help solve problems, experiment, interpret results, and verify conclusions
- Determine the reasonableness of solutions, including sign, size, relative accuracy, and units of measurement.

### Assessment

- Tests
- Quizzes
- Homework
- Classwork.

### Examinations

Advanced Placement Examination.

### Resources

- Foerster, P. A., *Calculus*, USA, Key Curriculum Press, 1998
- A graphic display calculator, such as the TI-84 is needed.

### Prerequisites

Pre Calculus (Grade of B- or better) and/or teacher recommendation.

### Credits

**One Credit.**