

AP CALCULUS AB CURRICULUM SUMMARY

The purpose of the summary is to present an overview of the curriculum. Parents, community, and teachers of other disciplines are the intended audience of the curriculum summary.

Prerequisite skills

- Graphing calc use
- Algebra skills
- Parent functions and transformations
- Trigonometry

Derivatives

- Definition
- Basic rules
- Tangent lines
- Physics applications
- Product and quotient rule
- Higher order derivatives
- Chain rule
- Implicit Differentiation
- Related rates

Limits

- Intuitively/ graphically
- Delta epsilon
- Analytically
- One sided limits
- Continuity
- Infinite limits

Applications of Derivatives

- Extrema
- Rolles Theroem
- Mean Value Theorem
- Increase/decrease with first derivative
- Concavity with second derivative
- Limits at infinity
- Curve sketching
- Optimization problems

BOARD APPROVED: 8/14/13
Advanced Placement Calculus AB

Department: Mathematics
Pre-requisite: Honors Math Analysis

Integrals

- Anti derivatives
- Differential equations & slope fields
- Basic integration rules
- Sigma notation
- Area under a curve
- Definite integrals
- Fundamental Thm. of calculus
- Mean Value Thm. for integrals
- Average Value of a function
- Integration by substitution
- Trapezoid Rule /Simpson's Rule

**Logarithmic, Exponential, and other
Transcendental Functions**

- Derivative of natural logs
- Logarithmic differentiation
- Integration involving natural logs
- Derivatives of inverse functions
- Derivative and integral of e^x
- Derivatives and Integrals for bases other than e
- Exponential Applications
- Derivative and integral of inverse trig functions

Applications of Integration

- Area between 2 curves
- Disk method for volumes of solids of revolution
- The Washer Method for volumes of solids of revolution
- Volume with cross sections
- The Shell Method for volumes of solids of revolution
- Arc Length
- Surface Area

Additional Topics

- Integration by parts
- Partial fractions
- Indeterminate forms and L'Hopital's Rule