

Calculus II

Syllabus

I. Applications of Integrals

- A. Velocity and net change
- B. Area between curves
- C. Volumes by slicing
- D. Volumes by shells
- E. Length of a curve
- F. Physical applications
- G. Average value of a function

II. Integration Methods

- A. Integration by parts
- B. Trigonometric integrals
- C. Trigonometric substitution
- D. Partial fractions
- E. Tables of integrals
- F. Approximate integration
- G. Improper integrals
- H. Introduction to differential equations

III. Sequences and Series

- A. Sequences
- B. Series
- C. Divergence test
- D. Integral test
- E. Comparison test and limit comparison test
- F. Ratio and root tests
- G. Alternating series and absolute convergence
- H. Approximating sums and error bounds

IV. Power Series

- A. Power series
- B. Representing functions as power series
- C. Taylor and Maclaurin series
- D. Applications of Taylor series

V. Parametric Curves and Polar Coordinates

- A. Parametric equations
- B. Calculus of parametric curves
- C. Polar coordinates
- D. Calculus of polar coordinates
- E. Conic sections
- F. Conic sections in polar coordinates