

Mathematics Department
Brooklyn College, City University of New York
Math 1206 (Calculus II) Syllabus
4 hours, 4 credits

An asterisk (*) indicates optional topics.

Inverse Trigonometric Functions

Review inverse functions and inverse trigonometric functions
Derivatives of inverse trigonometric functions
Integrals leading to inverse trigonometric functions

Applications of the Definite Integral

Area between curves
Volumes by slicing (disks and washers)
Volumes by cylindrical shells
Work; arc length

Techniques of Integration

Review of integration by substitution
Integration by parts
Trigonometric integrals (powers of sine, cosine, secant, tangent)
Trigonometric substitutions
Integration of rational functions by partial fractions
*Other techniques of integration (rationalizing substitutions, use of integral tables, use of software)

Other Integration Topics and L'Hospital's Rule

L'Hospital's Rule
Improper integrals
Approximate integration (trapezoidal rule and Simpson's Rule)

Polar Coordinates

Introduce polar coordinates
Graphs in polar coordinates
Areas and arc lengths in polar coordinates

Infinite Sequences and Series

Introduction of sequences and series
Convergence and divergence of sequences and series
Geometric series
The integral test, p -series
Comparison test, limit comparison test
Alternating series
Ratio test, root test
Absolute and conditional convergence
Power series
Differentiation and integration of power series
Taylor and Maclaurin series
Taylor's formula with remainder
*Binomial Series