Outline of Math 118

5 Integration

    A The Riemann Integral

    B Cauchy Criterion

    C Riemann Sums

    D Properties of Integrals

    E Fundamental Theorem of Calculus

    F Average Value of a Function

6 Logarithmic and Exponential Functions

    A Exponentials and Logarithms

    B Logarithmic Differentiation

    C Hyperbolic Functions

7 Techniques of Integration

    A Change of Variables

    B Integration by Parts

    C Integrals of Trigonometric Functions

    D Partial Fraction Decomposition

    E Trigonometric & Hyperbolic Substitutions

    F Integration of Certain Irrational Expressions

    G Strategy for Integration

    H Numerical Approximation of Integrals

8 Applications

    A Areas between Curves

    B Arc Length

    C Volumes by Cross Sections

    D Volumes by Shells

    E Work

    F Hydrostatic Force

    G Surfaces of Revolution

    H Centroids and Pappus' Theorems

    I Polar Coordinates

9 Improper Integrals and Infinite Series

    A Improper Integrals

    B Infinite Series

    C Power Series

A Complex Numbers