

Limits and Integrals

Key Concepts:

- Limits
- Integrals
- Calculus
- Infinite series

Important Definitions:

- Limit: The value that a function approaches as the input gets arbitrarily close to a certain point
- Integral: The area under a curve or the accumulation of a quantity over a defined interval

Examples:

- Problem 2: Evaluate the limit $L = \lim (n! / n^n)$ as n approaches infinity
- Problem 3: Evaluate the integral $I = \int[0,1] \ln(x) \ln(1-x) dx$

Evaluating Limits

- Using L'Hopital's rule
- Using the squeeze theorem
- Using the definition of a limit

Evaluating Integrals

- Using substitution
- Using integration by parts
- Using the fundamental theorem of calculus

Summary:

This topic covers the concepts of limits and integrals, including their definitions, properties, and applications.