

**Topics for Final Exam****1. The concept of limit**

- 1.1 Limits of sequences of real numbers
- 1.2 Limits of functions
- 1.3 Properties of limits

**2. The concept of a continuous function**

- 2.1 Definition of continuous functions
- 2.2 Properties of continuous functions
- 2.3 Discontinuous functions and types of discontinuity

**3. The Riemann Integral**

- 3.1 Definition of the Riemann integral
- 3.2 Properties of the Riemann integral
- 3.3 The primitive integral of a function and indefinite integrals
- 3.4 The definite integral
- 3.5 Interpretations of the Riemann Integral
  - 3.5.1 The area function
  - 3.5.2 Recovering a function from its rate of change
  - 3.5.3 Computing the amount of a substance from its linear density
  - 3.5.4 Average of a function

**4. Differential Calculus**

- 4.1 Definition of differentiable function and the derivative
- 4.2 Properties of differentiable functions
  - 4.2.1 Multiples, sums and products of differentiable functions
  - 4.2.2 Compositions of differentiable functions
  - 4.2.3 Quotients of differentiable functions
- 4.3 Interpretations of the derivative
  - 4.1 Instantaneous rate of change
  - 4.2 Linear approximation to a differentiable function
  - 4.3 Tangent line to the graph of a differentiable function.

**5. Fundamental Theorems**

- 5.1 Recovering a function from its rate of change
- 5.2 Differentiability of the area function
- 5.3 Evaluating integrals