# 29 Lecture - MTH101

## **Important Subjective**

#### What is the definite integral?

**Answer:** A definite integral is a mathematical tool used to calculate the area under a curve, as well as to find the net change of a quantity over a specified interval.

#### How is the definite integral represented?

**Answer:** The definite integral is represented by the symbol?.

#### What is the difference between a definite integral and an indefinite integral?

**Answer:** A definite integral has limits of integration and gives a numerical value, while an indefinite integral does not have limits of integration and gives a family of functions.

#### What is the fundamental theorem of calculus?

**Answer:** The fundamental theorem of calculus states that the definite integral of a function f(x) between two points a and b is equal to the difference of the antiderivative of f(x) evaluated at b and a.

#### What is the relationship between the derivative and the definite integral?

**Answer:** The derivative of a function represents its rate of change, while the definite integral represents the accumulated change over a specified interval.

#### What is the Riemann sum?

**Answer:** The Riemann sum is a method for evaluating the definite integral by dividing the area under the curve into small rectangular strips of equal width and adding up the areas of all the rectangles.

#### What is numerical integration?

**Answer:** Numerical integration is a method for evaluating the definite integral using numerical methods to approximate the integral when it cannot be evaluated analytically.

## What is the trapezoidal rule?

**Answer:** The trapezoidal rule is a numerical method for evaluating the definite integral by approximating the area under the curve using trapezoids instead of rectangles.

## What are the real-world applications of the definite integral?

**Answer:** The definite integral has many real-world applications, such as in physics, engineering, economics, and finance.

## How can the definite integral be used in finance?

**Answer:** The definite integral can be used in finance to calculate the present value of future cash flows.