TRINITY COLLEGE FOR WOMEN
NAMAKKAL
Department of Mathematics

DIFFERENTIAL CALCULUS
23UMA02 - ODD Semester

Applications of Differential Calculus

Presented by
Mrs. M. Nandhini
Assistant Professor
Department of Mathematics
http://www.trinitycollegenkl.edu.in/

Definition:

Calculus is that branch of mathematics that deals with growth (development), motion (process or power of changing place or position), maxima and minima.

It is the branch of mathematics that deals with the finding and properties of derivatives and integrals of functions, by methods originally based on the summation of infinitesimal differences.

Types of calculus

The two main types of calculus is

Differential Calculus
Integral Calculus

Differential Calculus

A branch of mathematics concerned chiefly with the study of the rate of change of functions with respect to their variables especially through the use of derivatives and differentials

Applications in Real Life

Fluid flow

Differential Calculus can be used to calculate the flow rate, velocity and pressure of fluids.

This is important for understanding how fluids move in pjpes and hydraulic systems

Heat Transfer

Differential Calculus can be used to calculate the rate of heat transfer through materials. This can help determine the thermal properties of materials.

Forces

Differential Calculus can be used to calculate the forces acting on a fluid. This is important in physics and engineering because forces determine how objects and fluids move.

Income

Differential Calculus can be used to calculate the rate of change in person's income over time.

This information can be used for financial planning and decision making.

Profit and Loss

Differential Calculus can be used to calculate profit and loss in a business using graphs

Temperature

Differential Calculus can be used to calculate the rate of change of temperature

Speed and Distance

Differential Calculus can be used to calculate speed or distance covered, such as miles per hour or kilometers per hour

Physics Equations

Differential Calculus can be used to derive many physics equations

Investment portfolios

Financial analysts can use differential Calculus to gauge how shifts in variables, like interest rates or market conditions, impact investment portfolios.

Optimization problems

Differential Calculus can be used to solve optimization problems, which involve maximizing or minimizing a variable.

GDP

Economists can use differential calculus to measure the rate of change of GDP with respect to time.

THANK YOU

http://www.trinitycollegenkl.edu.in/