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B.A. Economics
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Topic: Application of derivative

Introduction

In economics derivatives play a vital role. In this module we will talk about various important applications of derivatives such as:

1. The Extreme value theorem which is used to determine whether a function has a maximum value and a minimum value in any given interval.

2. The Mean value theorem which is an extension of the Intermediate value theorem, is used to find a point c belonging to the continuous interval $[a, b]$ where the tangent at $f(c)$ is equal to the slope of the interval.

3. Taylor's Formula which is often used in economics and is considered as one of the main results in mathematical analysis.

4. Newton's Formula which is used to compute the n th root of different numbers.

5. Second order and Higher order derivatives which are used to determine whether a function is concave or convex.

6. Cost Functions which are widely studied in economics, are used to derive the marginal cost and average costs.

7. L'Hopital's Rule which is a standard method for the systematic treatment of indeterminate forms i.e. forms for which the limit cannot be found without further examination.

The Extreme Value Theorem

One of the most important applications of calculus is to find the points in the domain of a function at which it reaches its largest and its smallest value. We usually refer to these points as maximum and minimum points, or together as the extreme points.