Contents

Statement

- If a function $f(x)$ is:
  1. continuous at interval $[a, b]$
  2. differentiable at interval (a, b)
- There exists a point in the curve c such that,

$$f^{'}(c) = \frac{f(b) - f(a)}{b - a}$$

Geometrical Interpretation

- If a function is continuous at closed interval and differentiable at an open interval then there exists a **point** in the curve whose **tangent** line is *parallel* to the **chord** joining the *end points* of the interval.

Problem Solving

Verification

- The *following* steps are taken to solve a problem involving verification of *Lagrange's* mean value **theorem** for a function $f(x)$ in an interval $[a, b]$.
  1. Verify that the function is **continuous** at the closed interval $[a, b]$.

$$\lim_{x \to c} f(x) = f(c)$$

  2. Verify that the function is differentiable at c such that $c\epsilon(a, b)$.
     - This is done by calculating $f^{'}(c)$.
     - If $f^{'}(c)$ yields any other *expression* other than real, the function is *not* **differentiable** .
  3. Calculate the point c by applying,

$$f^{'} = \frac{f(b) - f(a)}{b - a}$$