

Mathematical Preliminaries and Error Analysis

2. Review of Calculus

NOTATION.

$C(X)$ — All functions continuous on the set X

$C[a, b]$ — all functions continuous on the interval $[a, b]$

$C^n(X)$ — all functions that have n derivatives continuous on X

$C^\infty(X)$ — all functions that have derivatives of all orders on X

THEOREM (Mean Value Theorem). *If $f \in C[a, b]$ and f is differentiable on (a, b) , then a number c in (a, b) exists with*

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

or

$$f(b) = f(a) + f'(c)(b - a).$$

