Numerical Computing:

We Calculate different mathematical Problems make their algorithm and program.

PURPOSE:

Finding roots of non-linear equation

-> Root is the value that equivalent the equation on both sides.

-> Value of "x" on which "y" become Zero also known as root.

-> Non-linear equation are those in which variable having degree more than one. e.g (x^2, x^3, $2x^4$, $9x^5$...)

-> The Non-linear equation may be are of the following types.

- -> Algebric function.
- -> Transidental function.

e.g of Algebric function

$$f(x) = 5x^3 + 3x^2 + 2 = y$$

e.g of Transidental function include

e^x, $\log x$, $\sin x$, $\cos x$, ... etc

Method to Solve Non-linear Equation

- -> Bisection Method.
- -> Newton Raphson Method.
- -> Regular falsi Method. also Called Method of false
- -> Secant Method.
- -> Nested Multiplication Method.

Steps to Solve Alltrative Methods for finding Roots.

1. An initial guess value for the Solution.
2. An algorithm for improving the apropriate Solution
3. Criteria for Stoping the Computation.

TERMINATION Of Alteralive Procedure:

There are three Procedure for Termination of alrative Method

1→ Continue the Computing for a fix number of Alteration The final Value of 'xn' may accepted as result.

2→ Continue the Computing until the absolute ~~Value~~ difference between two Sucessive Value of xn, xn-1 is less then a pre assign accuracy Say "ϵ"

$$|x_n - x_{n-1}| < "\epsilon" > 0$$

3→ A better Criteria for Stopping the Process is to Use the following

$$\left| \frac{x_n - x_{n-1}}{x_n} \right| < \epsilon \quad \text{and} \quad \epsilon > 0$$