

STUDY OF STABILITY CRITERION FOR SOME ITERATIVE METHODS FOR SOLVING NON LINEAR EQUATION

Najmuddin Ahmad and Vimal Pratap Singh

Department of Mathematics,
Integral University, Kursi Rd, Lucknow,
Uttar Pradesh - 226026, INDIA

E-mail : najmuddinahmad33@gmail.com, singhvimal997@gmail.com

(Received: Jun. 23, 2020 Accepted: Jan. 20, 2021 Published: Apr. 30, 2021)

Abstract: Research is concerned with the study of stability criterion for some iterative methods for solving non linear equations. We introduce the comparative study for stability of iterative methods for solving nonlinear equations along with several example. Some simple but powerful criterion for local stability of fixed points are established. It is also established that the iterative method New Two Step - 2 (NTS-2) and New Three Step Method - 2 (NTSM-2) comparably more hyperbolic asymptotically stable and provides better result.

Keywords and Phrases: Stability, Two - Step, Three - Step, nonlinear equations, iterative methods.

2020 Mathematics Subject Classification: 65H05.

1. Introduction

Numerical analysis is the area of mathematics and computer sciences that creates, analyzes and numerically the problems of continuous mathematics. Such problems originate generally from real - world applications of algebra, geometry and calculus and they involves variable which very continuously : these problems occur throughout the natural sciences, social sciences, engineering, medicine and business. The concepts of stability can be understood by analyzing the numerical solutions of the nonlinear equation $f(x) = 0$ are being developed using stability of fixed points, see [14, 11, 15, 3, 1, 2, 8] and the references there in.