

New highly accurate iterative method of third order convergence for finding the multiple roots of nonlinear equations

ABSTRACT

We present a new third order convergence iterative method for m multiple roots of nonlinear equation. The proposed method requires one evaluation of function and two evaluations of the first derivative of function. In numerical tests exhibit that the present method provides provides high accuracy numerical result as compared to other methods. The stability of the dynamical behaviour of iterative method is investigated by displaying the basin of attraction. Basin of attraction displays less black points which give us wider choices of initial guess in computation.

Keyword: Basin of attraction; Multi-point iterative methods; Multiple roots; Nonlinear equations; Order of convergence