Solving third order boundary value problem with fifth order method

ABSTRACT

A fifth order direct method is developed for the numerical solution of nonlinear boundary value problems (BVPs) directly. Most of the existence research involving BVPs will reduce the problem to a system of first order Ordinary Differential Equations (ODEs). However, the proposed method will solve the third order BVPs directly without reducing to first order ODEs. The direct method will solve the nonlinear third order BVPs by shooting technique using constant step size. Numerical result is presented to illustrate the performance of the proposed method. The results clearly show that the proposed method is suitable for solving third order nonlinear BVPs.

Keyword: Boundary value problems; Direct method; Shooting technique