

Solving nonlinear system of third-order boundary value problems using block method

ABSTRACT

In this paper, we propose an algorithm of two-point block method to solve the nonlinear system of third-order boundary value problems directly. The proposed method is presented in a simple form of Adams type and two approximate solutions will be obtained simultaneously with the block method using variable step size strategy. The method will be implemented with the multiple shooting technique via the three-step iterative method to generate the missing initial value. Most of the existence method will reduce the third-order boundary value problems to a system of first order equations where the systems of six equations need to be solved. The method we proposed in this paper will solve the third-order boundary value problems directly. Two numerical examples are given to illustrate the efficiency of the proposed method.

Keyword: Block method; Multiple shooting technique; System of third-order boundary value problem