

Direct 4-point 1-step block method for solving Dirichlet boundary value problem

ABSTRACT

This paper presents 4-point 1-step block method (4LBVP) to solve the linear 2nd order boundary value problem (BVP) with Dirichlet boundary condition. 4LBVP will solve the linear 2nd order BVP with Dirichlet boundary condition directly without the need to reduce it first into the system of 1st order equations. 4LBVP will produce several numerical solutions simultaneously in one step. The formulation of the 4LBVP will be based on the Lagrange interpolating polynomial. 4LBVP will be used together with the linear shooting technique to produce the numerical solutions. Comparison with other methods will be given to show the advantages of this method.

Keyword: Block method; Dirichlet boundary value problems