Direct one-step method for solving third-order boundary value problems

ABSTRACT

A direct explicit Runge-Kutta type (RKT) method via shooting technique to approximate analytical solutions to the third-order two-point boundary value problems (BVPs) with boundary condition type I and II are proposed. In this paper first, a three-stage fourth-order direct explicit Runge-Kutta type method denoted as RKT3s4 is constructed. A new algorithm of shooting technique for solving two-point BVPs for third-order ordinary differential equations (ODEs) is presented.

Keyword: Direct Runge-Kutta method; Two-point boundary value problem; Shooting technique; Third-order ordinary differential equation