

Fifth order multistep block method for solving Volterra integro-differential equations of second kind

ABSTRACT

In the present paper, the multistep block method is proposed to solve the linear and non-linear Volterra integro-differential equations (VIDEs) of the second kind using constant step size. The proposed block method of order five consists of two point block method presented as in the simple form of Adams Moulton type. The numerical solutions are obtained at two new values simultaneously at each of the integration step. In VIDEs, the unknown function appears in the form of derivative and under the integral sign. The approximation of the integral part is estimated using the Boole's quadrature rule. The stability region is shown, and the numerical results are presented to illustrate the performance of the proposed method in terms of accuracy, total function calls and execution times compared to the existing method.

Keyword: Block method; Quadrature rule; Volterra integro-differential equation