One-step block method for solving Volterra integro-differential equations

ABSTRACT

One-step block method for solving linear Volterra integro-differential equations (VIDEs) is presented in this paper. In VIDEs, the unknown function appears in the form of derivative and under the integral sign. The popular methods for solving VIDEs are the method of quadrature or quadrature method combined with numerical method. The proposed block method will solve the ordinary differential equations (ODEs) part and Newton-Cotes quadrature rule is applied to calculate the integral part of VIDEs. Numerical problems are presented to illustrate the performance of the proposed method.

Keyword: Newton-Cotes quadrature rule; One-step block method; Volterra integro-differential equations