Numerical solution of nonlinear Fredholm and Volterra integrals by newton-Kantorovich and Haar wavelets methods

ABSTRACT

The current study proposes a numerical method which solves nonlinear Fredholm and Volterra integral of the second kind using a combination of a Newton–Kantorovich and Haar wavelet. Error analysis for the Holder classes was established to ensure convergence of the Haar wavelets. Numerical examples will illustrate the accuracy and simplicity of Newton–Kantorovich and Haar wavelets. Numerical results of the current method were then compared with previous well-established methods.

Keyword: Holder classes; Nonlinear integral equation; Haar wavelets; Newton–Kantorovich