Numerical Solution of System of Fredholm-Hammerstein Integral Equations using Modification of Hat Functions

Elnaz Babaei, Elham Hashemizadeh*
Depaetment of Mathematics, Karaj Branch, Islamic Azad University, Karaj, Iran

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Extended Abstract

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Introduction

A system of integral equations can describe different kind of problems in sciences and engineering. There are many different methods for numerical solution of linear and nonlinear system of integral equations.

Material and methods

This paper proposed a numerical method based on modification of Hat functions for solving system of Fredholm-Hammerstein integral equations. The proposed method reduced a system of integral equation to a system of algebraic equations that can be solved easily by known methods.

Results and discussion

For showing the accuracy and capability of the proposed method, some numerical examples are proposed that their results compared by results of other methods, and shows the capability and the superiority of this method to other existed methods.
Also this paper derived the computational cost and the error analysis of the proposed method.

Conclusion

The following conclusions were drawn from this research.

- This paper proposed a numerical method based on modification of Hat functions for solving system of Fredholm-Hammerstein integral equations.
- The proposed method reduced a system of integral equation to a system of algebraic equations that can be solved easily by known methods.
- The presented error analysis and solved problems show capability and the superiority of this method to other existed methods.

Keywords: Fredholm-Hammerstein integral equations, Modification of Hat functions, Operational matrix, System of integral equations.

*Corresponding author: hashemizadeh@kiau.ac.ir.ac.ir