

Quarter-Sweep Iteration Concept on Conjugate Gradient Normal Residual Method via Second Order Quadrature-Finite Difference Schemes for Solving Fredholm Integro-Differential

Abstract

In this paper, we have examined the effectiveness of the quarter-sweep iteration concept on conjugate gradient normal residual (CGNR) iterative method by using composite Simpson's (CS) and finite difference (FD) discretization schemes in solving Fredholm integro-differential equations. For comparison purposes, Gauss-Seidel (GS) and the standard or full- and half-sweep CGNR methods namely FSCGNR and HSCGNR are also presented. To validate the efficacy of the proposed method, several analyses were carried out such as computational complexity and percentage reduction on the proposed and existing methods.