

Half-Sweep Geometric Mean Iterative Method for the Repeated Simpson Solution of Second Kind Linear Fredholm Integral Equations

ABSTRACT

In previous studies, the effectiveness of the Half-Sweep Geometric Mean (HSGM) iterative method has been shown in solving first and second kind linear Fredholm integral equations using repeated trapezoidal (RT) discretization scheme. In this work, we investigate the efficiency of the HSGM method to solve dense linear system generated from the discretization of the second kind linear Fredholm integral equations by using repeated Simpson's $\hat{\text{S1}}$ scheme. The formulation and implementation of the proposed method are also presented. In addition, several numerical simulations and computational complexity analysis were also included to verify the efficiency of the proposed method.