SOR Iterative Method with Simpson's 1/3 Rule for the Numerical Solution of Fuzzy Second Kind Fredholm Integral Equations

ABSTRACT

In this study, we present the application of Successive Over-Relaxation (SOR) iterative method to solve fuzzy Fredholm integral equations of the second kind (FFIE-2). In addition to that, the Simpson's 1/3 quadrature rule is applied to derive the approximate solution of FFIE-2. Then, we use the approximate equation to generate a system of linear equations. Next, SOR iterative method is introduced to solve the generated system of linear equations. Moreover, we conduct some numerical examples to illustrate the applicability of the SOR iterative method. Finally, we discuss the efficiency of the proposed method by comparing the number of iterations, computational time and Hausdorff distance. Based on the numerical results, we conclude that SOR method is better than Jacobi and Gauss-Seidel iterative methods.