World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:16, No:05, 2022

The Finite Element Method for Nonlinear Fredholm Integral Equation of the Second Kind

Authors : Melusi Khumalo, Anastacia Dlamini

Abstract : In this paper, we consider a numerical solution for nonlinear Fredholm integral equations of the second kind. We work with uniform mesh and use the Lagrange polynomials together with the Galerkin finite element method, where the weight function is chosen in such a way that it takes the form of the approximate solution but with arbitrary coefficients. We implement the finite element method to the nonlinear Fredholm integral equations of the second kind. We consider the error analysis of the method. Furthermore, we look at a specific example to illustrate the implementation of the finite element method.

Keywords : finite element method, Galerkin approach, Fredholm integral equations, nonlinear integral equations
Conference Title : ICCMP 2022 : International Conference on Computational Mathematics and Programming
Conference Location : Vancouver, Canada
Conference Dates : May 23-24, 2022