

This work is concerned with the solutions of singular integral equations of second kind that have been obtained by using the Optimal Homotopy Asymptotic Method (OHAM). The accuracy and efficiency have been proven by solving examples of Volterra and Fredholm integral equations of second kind. It is shown through graphical illustration and tables that the OHAM solutions have least maximum error among the other existing methods which proves its usefulness and soundness. It is also demonstrated that how the OHAM solutions converge to exact solutions.

The first chapter contains fundamentals that will help to understand the phrasings which will be used later. The basic definitions in this chapter help in developing a solid understanding of the theory of integral equations.

In chapter 2, we have discussed Optimal Homotopy Asymptotic Method (OHAM) and its algorithm.

The third chapter includes numerical examples which are solved using Optimal Homotopy Asymptotic Method (OHAM).

In Chapter 4, we have observed that solutions obtained by OHAM are more efficient and reliable than other methods.