Abstract

The theory of integral equation is very useful tool to deal with problems in applied mathematics and engineering applications. A large class of initial and boundary value problems can be converted to Volterra or Fredholm integral equation.

This research includes two chapters.

In chapter one, we considered basic concepts of integral equations with different types of integral equations such as Volterra, Fredholm, Volterra-Fredholm, and singular integral equations. The important functions of integral equations have been introduced. The definition of integral equations has been introduced, several kinds of integral equations have been considered with illustrative examples.

Chapter two includes a definition and important properties of Laplace transform and algorithm of Laplace transform method find analytic solution to the nonhomogenous linear Volterra integral equations of second kind. In illustrative examples, we studied several nonhomogenous functions.