COMPLEX SADIK INTEGRAL TRANSFORM OF LINEAR VOLTERRA INTEGRO-DIFFERENTIAL EQUATIONS OF SECOND KIND

Harish Nagar and Sonia Sharma

Department of Mathematics,
Chandigarh University Gharuan,
Mohali - 140413, Punjab, INDIA

E-mail : drharishngr@gmail.com, skaushiksonia96@gmail.com

Abstract: When we transform an initial value problem into an integral equation, Volterra integral equations form. Compared to the starting value problem, the Volterra integral equation is much simpler to solve as a significant subclass of integral equations, numerous academics and mathematicians focus on Volterra integral equations to provide approximate or precise solutions. Recently, mathematics scientists have turned their attention to using the integral transform to solve issues in a variety of scientific domains, including engineering and mathematical sciences. The fundamental problem is reduced to a simpler algebraic equation using the complex transform. This paper utilizes the complex Sadik transform to track down the specific answer for the second kind of linear Volterra integro-differential equation. After that, the solution to this fundamental problem can be found by solving this equation and using the complex Sadik transform's inverse. Through some numeric examples, complex Sadik integral transform's effectiveness and capacity to deliver a precise solution with the least number of calculations are shown.

Keywords and Phrases: Complex Sadik integral transform, Volterra integro-differential equation, inverse complex Sadik integral transform.

2020 Mathematics Subject Classification: 45D05, 44A10, 44A20.