



ON THE NUMERICAL SOLUTION OF VOLTERRA-FREDHOLM INTEGRAL EQUATIONS WITH ABEL KERNEL USING LEGENDRE POLYNOMIALS

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Abstract

Legendre collocation method and Trapezoidal rule are presented to solve numerically the Volterra-Fredholm integral equations with Abel kernel. We transform the Volterra integral equations to a system of Fredholm integral equations of the second kind which will be solved by Legendre method. This method is based on replacement of the unknown function by truncated series. This lead to a system of algebraic equations. Thus, by solving the matrix equation, the coefficients are obtained. A numerical example is included to certify the validity and applicability of the proposed technique.

Keywords and phrases: Volterra-Fredholm integral equations, Abel kernel, integral equation, collocation matrix method, Legendre polynomials, Trapezoidal rule.

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