

Analysis of Various Iterative Methods for Solving Differential Equations

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ABSTRACT

In this paper, we will be analyzing the work of Christopher C. Tisdell by explaining the different types of IM (iterative methods) for solving IV (initial value) problems of many types of ordinary DE. We will be looking at the efficiency of these methods including their performance, convergence, number of iterations required to converge, and computational time. One of the efficient methods for solving the differential equations is the Picard Method, being the most efficient in its convergence, computational time, and computational cost. Other methods which we will be looking at are the Jacobi method, Gauss-Seidel method, and the Sturm-Liouville problem. All these types of methods which includes IVP are considered iterative methods to solve DE.

Keywords: Ordinary Differential equations, initial value problems, iterative methods, Picard method, Jacobi method, Gauss-Seidel method, Sturm-Liouville method, solutions, approximations.

