Abstract

There are many benefits to improve methods of Euler for solving the initial value problem (IVPs). Among the good is a simple implementation and low-cost computational. However, there are problems of accuracy and instability in the Euler method. Therefore, the main purpose of this research is to discuss the improvement of the Euler method using Non-standard Finite Difference (NSFD) scheme in the Initial Value Problems (IVPs). The study is done using a NSFD in the Euler and the Third Order Euler (TOE) method. Combinations of these methods can provide advantages such as easy implementation, low computational cost and better accuracy. Linear and nonlinear IVPs will be tested using SCILAB. About six various problems used to test with various step sizes. The result obtained shows that the NSFD approaching the exact solution.

**Index Terms**

Computer Science

Information Sciences

**Keywords**

Non-standard Finite Difference Scheme, Initial Value Problem, Euler