A nonlinear computational method for the solution of initial value problems for ordinary differential equations

Abstract

It is a documented fact that mathematical formulation of physical phenomena in many diverse fields such as electrical engineering, control theory, medicine and even in biology often leads to initial value problems of the form \( \frac{dy}{dt} = f(t, y) \). In this paper, we propose a one-step numerical scheme that can solve some of these problems. The proposed method compares very well with other known methods. The efficiency of the method is examined in terms of consistency, stability and convergence. We also construct the Region of Absolute Stability (RAS) of the scheme.

References

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Index Terms

Computer Science
Applied Mathematics

Keywords
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Initial Value Problem (ivp)
Nonlinear Method
Absolute Stability
Consistency