

On the integration of stiff ODEs using block backward differentiation formulas of order six

ABSTRACT

In this research, a six-order, fully implicit Block Backward Differentiation Formula with two off-step points (BBDFO(6)), for the integration of first-order ordinary differential equations (ODEs) that exhibit stiffness, is proposed. The order, consistency and stability properties of the method are discussed, and the method is found to be zero stable and consistent. Hence, the method is convergent. The numerical comparisons with the existing methods of a similar type are given to demonstrate the accuracy of the derived method.

Keyword : Fully implicit; Block backward differentiation formula; Off-step point