Numerical Solutions of the Modified Burgers' Equation by Cubic B-spline Collocation

Method S. Kutluay¹, Y. Ucar¹ and N.M. Yağmurlu¹

5. Rublady , 1. Obar and Will. Raginaria

¹Department of Mathematics, Faculty of Arts and Sciences, İnönü University, Malatya, Turkey

Abstract

In this paper, a numerical solution of the modified Burgers' equation is obtained by a cubic B-spline collocation method. In the solution process, a linearization technique has been applied to deal with the non-linear term appearing in the equation. The computed results are compared with the results given in the literature. The error norms L_2 and L_{∞} are also computed and found to be sufficiently small.

References

[1] D. Irk, Sextic B-spline collocation method for the modified Burgers' equation, Kybernetes , 38 (2009) 1599–1620.

[2] M. A. Ramadan and T. S. El-Danaf, Numerical treatment for the modified burgers equation, Mathematics and Computers in Simulation 70, (2005) 90-98.

[3] T. Roshan and K.S. Bhamra, Numerical solutions of the modified Burgers' equation by Petrov-Galerkin method, Applied Mathematics and Computation 218 (2011) 3673-3679.

[4] A. G. Brastos and L. A. Petrakis, An explicit numerical scheme for the modified Burgers' equation, International Journal for Numerical Methods in Biomedical Engineering, 27 (2011) 232-237.