

TENTH ORDER COMPACT FINITE DIFFERENCE SCHEMES FOR ONE DIMENSIONAL HELMHOLTZ EQUATION USING NEUMANN BOUNDARY CONDITION

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1 Abstract

This paper is designed to derived Sixth, eight and tenth order compact finite difference schemes for one dimensional Helmholtz equation using Neumann boundary condition. Numerical experiments was conducted to test the efficiency, accuracy and validity of the proposed shemes. Numerical results obtained from difference orders are compared and also with the exacts solution, Convergence and stability obtained and errors computed using L2 norms. Results shows that the tenth order of accuracy is better than order eight and sixth order while the sixth order of accuracy is better than the fourth order.

1.1 keywords

Tenth Order, compact finite difference schemes, one dimensional Helmholtz equation, Numericak eperiments Convergence and Stability.