

Quartic Trigonometric Tension B-spline Finite Element Method for Solving Gardner Equation

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Abstract

Method of collocation is established for getting solution of the Gardner equation (GE). The GE is fully integrated by way of the Crank-Nicolson method for time variable and collocation method for spatial variable. Trial function of the collocation method is set up using combination of quartic trigonometric tension (QTT) B-splines. Convergence analysis of suggested method is investigated. Performance of the quartic trigonometric tension B-splines is searched by studying three test problems; propagation of bell shape solitary wave, interaction of two positive bell shape solitary wave and wave generation.

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