

Approximate solutions of time fractional Fornberg-Whitham type equations by Laplace decomposition method

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In this study, the approximate solutions of the nonlinear time fractional Fornberg-Whitham and modified Fornberg-Whitham equations are derived by means of the Laplace decomposition method. Laplace decomposition method is a combined form of the Laplace transform and the Adomian decomposition method. The obtained solutions are compared with the exact solution to verify the accuracy of the method. Further, the numerical results showed that the behavior of the approximate solutions is similar to the behavior of the exact solutions. Consequently, we realize that the approximate solution is rapidly convergent series as the exact solutions. In addition, the computations shows that the described method is easy to apply and it has a small cost of computation.

Keywords: Fractional derivative; Time-fractional Fornberg-Whitham equation; Adomian decomposition method; Laplace Transformation.

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