

Legendre Wavelet Solution of High Order Nonlinear Ordinary Delay Differential Equations

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Abstract

The purpose of this study is to illustrate the use of the Legendre wavelet method in the solution of high order nonlinear ordinary differential equations with variable and proportional delays. The main advantage of using Legendre polynomials lies in the orthonormality property, which enables a decrease in the computational cost and runtime. The method is applied to five differential equations up to sixth order, and the results are compared with the exact solutions and other numerical solutions when available. The accuracy of the method is presented in terms of absolute errors. The numerical results demonstrate that the method is accurate, effectual and simple to apply.

References

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