

A novel approach to solve the delay differential equations by using Clique polynomial

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Abstract

In this paper, we generalized the operational matrix of integration by the clique polynomial of a complete graph. Based on this matrix, the clique polynomial operational matrix method (CPOMM) is proposed for the numerical solution of linear and nonlinear delay differential equations, which is transformed into a system of linear or nonlinear algebraic equations solved effectively with the help of suitable solvers. Illustrative examples are checked through the error analysis for the efficiency of the developed method. The numerical results are comparing splendidly with the corresponding exact solution and existing method.

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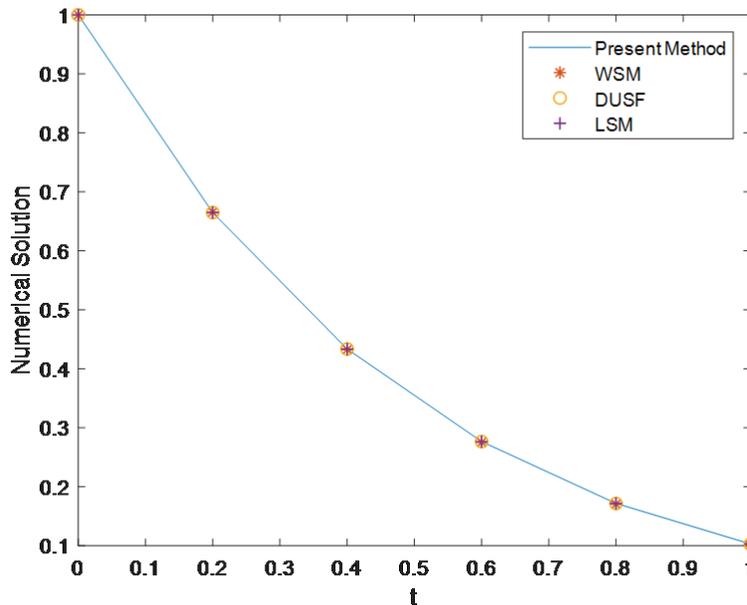


Figure 1: Numerical solutions with exact solution for $n = 8$ of Example 1.