

TWO AND THREE POINT ONE-STEP BLOCK METHODS FOR SOLVING DELAY DIFFERENTIAL EQUATIONS

(Kaedah Blok Satu Langkah Dua dan Tiga Titik bagi Penyelesaian
Persamaan Pembezaan Lengah)

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ABSTRACT

In this paper, initial value problems of first order delay differential equations (DDEs) are solved using two and three point one step block method. Neville's interpolation will be implemented for the solutions of the delay argument. The general formulation of one-step block method for solving ordinary differential equations is adapted to solve DDEs. The P- and Q-stability are also discussed. Numerical results are given to illustrate the performance of those block methods for solving delay differential equations.

Keywords: Delay differential equations; variable step size; block method

ABSTRAK

Dalam makalah ini, masalah nilai awal persamaan pembezaan lengah peringkat pertama diselesaikan menggunakan kaedah blok satu langkah dua dan tiga titik. Interpolasi Neville digunakan bagi menyelesaikan sebutan lengah. Formulasi umum kaedah blok satu langkah bagi penyelesaian persamaan pembezaan biasa diadaptasi untuk menyelesaikan persamaan pembezaan lengah. Rantau kestabilan-P dan -Q juga dibincangkan. Hasil berangka disediakan untuk menggambarkan prestasi kedua-dua kaedah blok bagi penyelesaian persamaan pembezaan lengah.

Kata kunci: Persamaan pembezaan lengah; saiz langkah boleh berubah; kaedah blok

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