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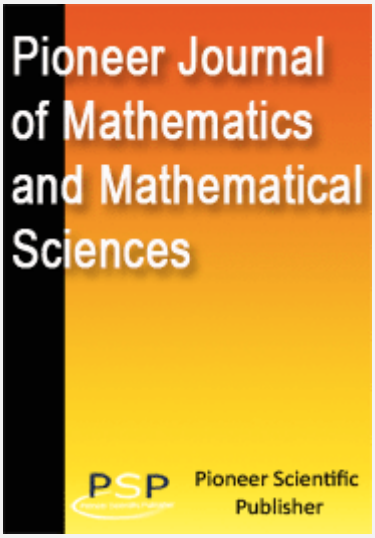

CHEBYSHEV METHODS FOR THE NUMERICAL SOLUTION OF 4TH ORDER DIFFERENTIAL EQUATIONS

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Abstract

We consider in this paper the application of Chebyshev polynomials in solving fourth order differential equations and trial solution constructed as Chebyshev form of Fourier cosine series is employed. Also formula which enables both sides of the differential equations to be expressed as sum of Chebyshev polynomials is derived. As a means of finding the numerical values of the approximant, collocation and coefficients comparison techniques are applied after the entire differential equation is converted into Chebyshev form.

We seek to investigate the efficiency and the applicability of these methods vis-à-vis the problems considered. For polynomial variable coefficients equations, standard formula for expressing such, in term of Chebyshev series is applied.

Keywords and phrases: collocation, coefficient comparison, trial solution, Chebyshev series.