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SEXTIC B-SPLINE GALERKIN METHOD FOR SIXTH ORDER BOUNDARY VALUE PROBLEMS

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Abstract

In this paper, sixth order boundary value problems are solved numerically by Galerkin method. The solution is approximated as a linear combination of sextic B-spline functions. The sextic B-splines constitute a basis for the space of sixth order polynomial splines. In the method the basis functions are redefined into a new set of basis functions which vanish on the boundary where the Dirichlet types of boundary conditions are prescribed. To test the efficiency of the method, several numerical examples of sixth order linear and nonlinear boundary value problems are solved by the proposed method. Numerical results obtained by the proposed method are in good agreement with the exact solutions available in the literature.

Key Words : Sextic B-splines, Sixth order boundary value problems, Galerkin method, Band matrix, Absolute error.

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