

A comparison on solutions of fifth-order boundary-value problems

ABSTRACT

A fast and accurate numerical scheme for the solution of fifth-order boundary-value problems has been investigated in this work. We apply the reproducing kernel method (RKM) for solving this problem. The analytical results of the equations have been acquired in terms of convergent series with easily computable components. We compare our results with the numerical methods: B-spline method, decomposition method, variational iteration method, Sinc-Galerkin method and homotopy perturbation method. The comparison of the results with exact ones is made to confirm the validity and efficiency.

Keyword: Reproducing kernel method; Series solutions; Fifth-order boundary-value problems; Reproducing kernel space, numerical methods