



**A COLLOCATION METHOD FOR LANE-EMDEN TYPE  
EQUATIONS IN TERMS OF GENERALIZED  
BERNSTEIN POLYNOMIALS**

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**Abstract**

In this study, a collocation method based on Bernstein polynomials defined on the interval  $[a, b]$  is developed for approximate solution of the nonlinear differential equations of Lane-Emden type that have an important place in astrophysics and mathematical physics. The proposed method reduces the solution of nonlinear problem to the solution of a system of linear algebraic equations iteratively by using quasilinearization technique and collocation points. Some numerical examples are given to illustrate the efficiency, validity and applicability of the method.

**Keywords and phrases:** Bernstein polynomial approach, Lane-Emden type equations, quasilinearization technique, collocation method.

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