Higher Order Finite Difference Symbolic Solutions of Some Differential Equations Using MATLAB

Avtar Singh[1*], R. N. Prajapati[2]

[1]Reserch Scholar, Department of Mathematics, Chandigarh University, Punjab, INDIA, 140413
[2]AssistantProfessor, Department of Mathematics, Chandigarh University, Punjab, INDIA, 140413

[*]Corresponding Author

ABSTRACT

The study of this article is to obtain symbolic solutions to the systems of ordinary differential equations on higher-order boundary value problems (BVPs) using the concept of the matrix inverse method with finite differences. The node points of governing equations are stated in matrix form, and the boundary (x = 0 and x =1) are taken as arbitrary constants, both linear and non-linear differential equations with boundary conditions are considered for evaluation, earlier problem was solved by taking two interior node points. In this study, we obtained solutions by taking three internal node points. Heat flow through the rectangular fin and cylindrical catalyst pellet equation is demonstrated, outcomes are discussed through tables and graphs by this technique and MATLAB software is used to obtain the solution.

Keywords: MATLAB, Matrix Inverse, Finite-difference, Symbolic Solution, Differential equations.

DOI: 10.21467/abstracts.138 ISBN: 978-81-957605-2-7 (eBook)