

# Modification of Lesnic's Approach and New Analytic Solutions for Some Nonlinear Second-Order Boundary Value Problems with Dirichlet Boundary Conditions

Abdelhalim Ebaid

Department of Mathematics, Faculty of Science, Tabuk University, P. O. Box 741, Tabuk 71491, Saudi Arabia

Reprint requests to A. E.; E-mail: halimgamil@yahoo.com

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For solving nonlinear boundary value problems (BVPs), a main difficulty of using Adomian's method is to find a canonical form which takes into account all the boundary conditions of the problem. This difficulty is overcome by using a modification for Lesnic's approach developed in this paper. The effectiveness of the proposed procedure is verified by two nonlinear problems: the nonlinear oscillator equation and Troesch's problem.

*Key words:* Adomian Decomposition Method; Nonlinear Oscillator; Troesch's Problem.