ADOMIAN DECOMPOSITION METHOD FOR NONLINEAR STURM-LIOUVILLE PROBLEMS

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Abstract. In this paper the Adomian decomposition method is applied to the nonlinear Sturm-Liouville problem

$$-y'' + y(t)^p = \lambda y(t), \qquad y(t) > 0, \ t \in I = (0,1), \ y(0) = y(1) = 0,$$

where $p > 1$ is a constant and $\lambda > 0$ is an eigenvalue parameter. Also, the eigenvalues and the behavior of eigenfuctions of the problem are demonstrated.

Full text

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