Original Articles

Multiple Solutions and Its Morse Index for One-Dimensional Nonlinear Problem

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摘要   The multiple solutions for one-dimensional cubic nonlinear problem $u''+u^3=0, u(0)=u(\pi)=0$ are computed, on the basis of the eigenpairs of $-\phi''_k=\lambda_k \phi_k, \ k=1,2,3 \cdots$. There exist two nonzero solutions $\pm u_{k}$ corresponding to each k, and their Morse index $MI(k)$ for $1\leq k\leq 20$ is to be exactly determined. It is shown by the numerical results that $MI(k)\geq k$.

关键词   Nonlinear problem, multiple solutions, series expression, Morse index

分类号

Abstract

Key words

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