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Existence results for a second order boundary value problem with four-point nonlocal integral boundary conditions

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Abstract

In this paper, some new existence results are investigated for second order nonlinear differential equations with four-point nonlocal integral boundary conditions, by applying standard fixed point theorems and Leray-Schauder degree theory. Our results are new in the sense that the nonlocal parameters in the integral boundary conditions for the problem appear in the integral part of the conditions, in contrast to the available literature on four-point integral boundary value problems which deals with the four-point boundary conditions restrictions on the solution or gradient of the solution of the problem. Some illustrative examples are presented.

Author Keywords

Contraction principle; Existence; Four-point integral boundary conditions; Krasnoselskii's fixed point theorem; Leray-Schauder degree; Nonlinear second order differential equations

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