



Boundary data smoothness for solutions of nonlocal boundary value problems for second order differential equations

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Received 13 September 2006

Available online 25 October 2006

Submitted by R.P. Agarwal

Dedicated to William Ames

Abstract

Under certain conditions, solutions of the boundary value problem, $y'' = f(x, y, y')$, $y(x_1) = y_1$, and $y(x_2) - \sum_{i=1}^m r_i y(\eta_i) = y_2$, are differentiated with respect to boundary conditions, where $a < x_1 < \eta_1 < \dots < \eta_m < x_2 < b$, $r_1, \dots, r_m \in \mathbb{R}$, and $y_1, y_2 \in \mathbb{R}$.

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Keywords: Nonlinear boundary value problem; Ordinary differential equation; Nonlocal boundary condition; Existence; Uniqueness

1. Introduction

In this paper, we will be concerned with differentiating solutions of certain nonlocal boundary value problems with respect to boundary data for the second order ordinary differential equation,

$$y'' = f(x, y, y'), \quad a < x < b, \quad (1.1)$$

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