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ON UNIQUENESS OF A SOLUTION TO NONLINEAR BOUNDARY VALUE PROBLEMS FOR A SYSTEM OF TWO FIRST-ORDER DIFFERENTIAL EQUATIONS

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Consider the system of two differential equations

$$x' = h(t, x, y), \quad y' = f(t, x, y) \tag{1}$$

together with the following boundary conditions

$$L_1(x(a), y(a)) = 0, \quad L_2(x(a), x(b), y(a), y(b)) = 0, \tag{2}$$

where $h, f \in Car(I \times R^2, R), \quad L_1 \in C(R^2, R), \quad L_2 \in C(R^2, R)$.

We prove the following result.

Theorem 1. *Let L_1 be strictly increasing in the first variable and strictly decreasing in the second one. Let L_2 be increasing in all arguments and strictly increasing in the second one. Let also the condition $A_3 \wedge A_4 \wedge A_{10} \wedge A_{12}$ be fulfilled, where A_i, $i = 3, 4, 10, 12$ are given in* [1].

Then the boundary value problem (1), (2) *cannot have more than one solution.*

REFERENCES

[1] V. Ponomarev. About uniqueness of a solution of boundary value problems for a system of two first-order differential equations with linear boundary conditions, I. *The paper collection: "Mathematics. Differential equations." Univ. of Latvia, Institute of Math. and Comp. Sci.,* **4**, 2004, 73 – 80.