

On finding solutions of two-point boundary value problems for a class of non-linear functional differential systems

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We consider the two-point boundary value problems for a certain class of non-linear functional differential equations. To study the problem, we use a method based upon a special type of successive approximations that are constructed analytically and, under suitable conditions, converge uniformly on the given interval.

Our techniques lead one to a certain finite-dimensional system of numerical determining equations that "detect" all the solutions of the problem. Based on properties of these equations, we give efficient conditions ensuring the solvability of the original problem. The conditions are formulated in terms of functions that are potential candidates for approximate solutions and, being such, are constructed explicitly.