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Solution sets of boundary value problems for nonconvex differential inclusions. (English)

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The following boundary value problem in $\mathbb{R}^n$ is considered: (1) $x''(t) \in F(t, x(t), x'(t))$, $x(0) = x(1) = 0$. In (1), $F : [0,1] \times \mathbb{R}^n \times \mathbb{R}^n \rightsquigarrow \mathbb{R}^n$ denotes a set-valued map with nonempty compact values. It is proved that if F is Lipschitzian then the solution set of (1) is a retract of $W^{2,1}$. If, moreover, F has convex values then the solution set is retract of C^1. An existence theorem is given for a continuous map F with nonconvex values.

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MSC:

34A60	Ordinary differential inclusions	Cited in **1** Review
34B15	Nonlinear boundary value problems for ordinary differential equations	Cited in **4** Documents

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differential inclusions; boundary value problem; retract; existence

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