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Integrability of Pseudomonotone Differentiable Maps and the Revealed Preference Problem

The problem considered is as follows: given $C \subset \mathbb{R}^n$ and $F : C \rightarrow \mathbb{R}^n$ differentiable, find $f : C \rightarrow \mathbb{R}$ differentiable such that $\|\nabla f(x)\|^{-1}\nabla f(x) = \|F(x)\|^{-1}F(x)$ for all $x \in C$. Conditions for f to be pseudoconvex or convex are given. The results are applied to the differentiable case of the revealed preference problem.

Keywords: Generalized convexity, generalized monotonicity, consumer theory, direct and indirect utility functions, revealed preference theory.

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