Reduction Principles and Applications to Quasilinear Elliptic Problems

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We study Liouville theorems for coercive equations of the type $L(u) = f(x, u, \nabla_L u)$ on $\Omega \subset \mathbb{R}^N$. By a variant of Kato's inequality we show that the assumption that the possible solutions are nonnegative involves no loss of generality. Related consequences such as comparison principles and special a priori bounds on solutions are derived. Underlying structures we are interested in include the canonical Euclidean space and Carnot groups as well.