

Optimization by n -homogeneous polynomial perturbations *

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We deal with infinite dimensional optimization in Banach spaces, finding an existence result for maximum (or minimum) points for a certain type of functions.

A remarkable result in this direction is the Stegall variational principle [10]: if C is a nonempty, closed, bounded and convex subset of a Banach space, C has the Radon-Nikodym property and f is an upper bounded upper semicontinuous real-valued function on C , then there exists an arbitrarily small linear continuous perturbation φ such that $f + \varphi$ attains its strong maximum on C . Our aim in this note is to obtain a Stegall's type result showing that we have an arbitrarily small continuous n -homogeneous polynomial perturbation (n -odd natural number) with the same property.

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