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Nota di contenuto	- 1. The Weierstrass Theorem - the origin of optimization -- 2. Some basics from functional analysis and function spaces -- 3. Differentiation in infinite dimensional spaces -- 4. On the Weierstrass Theorem in infinite dimensional spaces -- 5. Applications to multiple integrals.
Sommario/riassunto	This textbook gives an introduction to optimization tools which arise around the Weierstrass theorem about the minimum of a lower semicontinuous function. Starting from a Euclidean space, it moves further into the infinite dimensional setting towards the direct variational method, going through differentiation and introducing relevant background information on the way. Exercises accompany the text and include observations, remarks, and examples that help understand the presented material. Although some basic knowledge of functional analysis is assumed, covering Hilbert and Banach spaces and the Lebesgue integration, the required background material is covered throughout the text, and literature suggestions are provided. For less experienced readers, a summary of some optimization techniques is also included. The book will appeal to both students and instructors in specialized courses on optimization, wishing to learn more about

variational methods.
