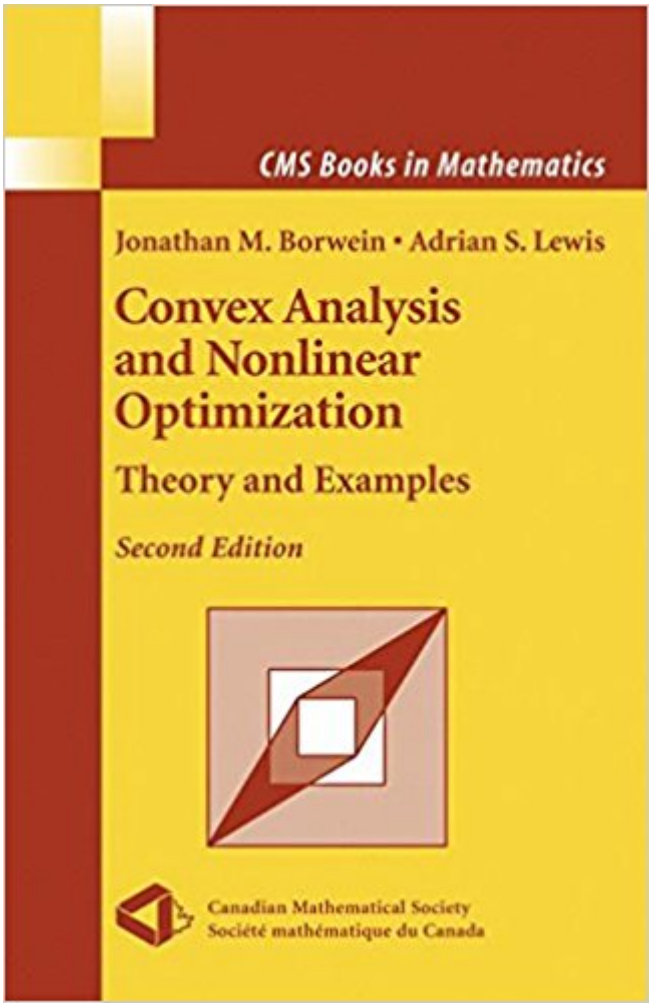
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Convex Analysis And Nonlinear Optimization: Theory And Examples (CMS Books In Mathematics)



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Synopsis

Optimization is a rich and thriving mathematical discipline, and the underlying theory of current computational optimization techniques grows ever more sophisticated. This book aims to provide a concise, accessible account of convex analysis and its applications and extensions, for a broad audience. Each section concludes with an often extensive set of optional exercises. This new edition adds material on semismooth optimization, as well as several new proofs.

Book Information

Series: CMS Books in Mathematics

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Best Sellers Rank: #683,909 in Books (See Top 100 in Books) #104 inÃ Â Books > Science & Math > Mathematics > Applied > Linear Programming #127 inÃ Â Books > Science & Math > Mathematics > Pure Mathematics > Functional Analysis #338 inÃ Â Books > Business & Money > Processes & Infrastructure > Operations Research

Customer Reviews

From the reviews: MATHEMATICAL REVIEWS "The present book gives a concise treatment of the area, aiming to show the relevance in particular of new developments in nonsmooth analysis to optimization theoryÃ¢â ¬Â¦The book is of a manageable size and as such should appeal to the student. Further, the proofs are generally short and snappy, revealing the power of the abstract structural approach and fruitful interplay of geometrical and topological ideas. However, considerable ground is covered and, as a graduate text should, it develops the subject up to the frontiers of current research, giving an idea of areas for further explorationÃ¢â ¬Â¦This text will give impetus to the teaching of analysis because it makes evident its significant applications in optimization. But it will also bring added attraction to the study of optimization because it reveals so much of its abstract structural base." "The book is divided into 11 chapters and provides a comprehensive presentation of the main features of convex analysis and nonlinear optimisation.

Each result is sustained by a set of theorems, propositions and corollaries and includes rigorous proofs and clarifying discussions. They are complemented by a series of theoretical exercises. Ã¢â ¬Â¦ This book is warmly recommended for an advanced course in analysis for mathematicians or as a first graduate course for students involved with optimization theory." (Carlos Narciso Bouza Herrera, Zentralblatt MATH, Vol. 1116 (18), 2007)

A cornerstone of modern optimization and analysis, convexity pervades applications ranging through engineering and computation to finance. This concise introduction to convex analysis and its extensions aims at first year graduate students, and includes many guided exercises. The corrected Second Edition adds a chapter emphasizing concrete models. New topics include monotone operator theory, Rademacher's theorem, proximal normal geometry, Chebyshev sets, and amenability. The final material on "partial smoothness" won a 2005 SIAM Outstanding Paper Prize. Jonathan M. Borwein, FRSC is Canada Research Chair in Collaborative Technology at Dalhousie University. A Fellow of the AAAS and a foreign member of the Bulgarian Academy of Science, he received his Doctorate from Oxford in 1974 as a Rhodes Scholar and has worked at Waterloo, Carnegie Mellon and Simon Fraser Universities. Recognition for his extensive publications in optimization, analysis and computational mathematics includes the 1993 Chauvenet prize. Ã Â Adrian S. Lewis is a Professor in the School of Operations Research and Industrial Engineering at Cornell. Following his 1987 Doctorate from Cambridge, he has worked at Waterloo and Simon Fraser Universities. He received the 1995 Aisenstadt Prize, from the University of Montreal, and the 2003 Lagrange Prize for Continuous Optimization, from SIAM and the Mathematical Programming Society. Ã Â About the First Edition: Ã Â "...a very rewarding book, and I highly recommend it... " - M.J. Todd, in the International Journal of Robust and Nonlinear Control Ã Â "...a beautifully written book... highly recommended..." - L. Qi, in the Australian Mathematical Society Gazette Ã Â "This book represents a tour de force for introducing so many topics of present interest in such a small space and with such clarity and elegance." - J.-P. Penot, in Canadian Mathematical Society Notes Ã Â "There is a fascinating interweaving of theory and applications..." - J.R. Giles, in Mathematical Reviews "...an ideal introductory teaching text..." - S. Cobzas, in Studia Universitatis Babes-Bolyai Mathematica

This is an excellent introductory text with a more mathematical edge. It is much better than the typical computation-based books, but is not as rigorous as some of the more technical books. It does fit a small niche, but it is neither computationally nor mathematically advanced, which is a bit

disappointing.

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