

1. Record Nr.	UNINA9910829921703321
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Titolo	Convexity and optimization in R [superscript n] [[electronic resource] /] / Leonard D. Berkovitz
Pubbl/distr/stampa	New York, : J. Wiley, c2002
ISBN	1-280-36700-8 9786610367009 0-470-31182-7 0-471-46166-0 0-471-24970-X
Descrizione fisica	1 online resource (283 p.)
Collana	Pure and applied mathematicss
Disciplina	516/.08 519.3
Soggetti	Convex sets Mathematical optimization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 261-262) and index.
Nota di contenuto	CONVEXITY AND OPTIMIZATION IN R(n); CONTENTS; Preface; I Topics in Real Analysis; 1. Introduction; 2. Vectors in R(n); 3. Algebra of Sets; 4. Metric Topology of R(n); 5. Limits and Continuity; 6. Basic Property of Real Numbers; 7. Compactness; 8. Equivalent Norms and Cartesian Products; 9. Fundamental Existence Theorem; 10. Linear Transformations; 11. Differentiation in R(n); II Convex Sets in R(n); 1. Lines and Hyperplanes in R(n); 2. Properties of Convex Sets; 3. Separation Theorems; 4. Supporting Hyperplanes: Extreme Points; 5. Systems of Linear Inequalities: Theorems of the Alternative 6. Affine Geometry 7. More on Separation and Support; III Convex Functions; 1. Definition and Elementary Properties; 2. Subgradients; 3. Differentiable Convex Functions; 4. Alternative Theorems for Convex Functions; 5. Application to Game Theory; IV Optimization Problems; 1. Introduction; 2. Differentiable Unconstrained Problems; 3. Optimization of Convex Functions; 4. Linear Programming Problems; 5. First-Order Conditions for Differentiable Nonlinear Programming Problems; 6. Second-Order Conditions; V Convex Programming and Duality; 1.

Problem Statement

2. Necessary Conditions and Sufficient Conditions  
3. Perturbation Theory; 4. Lagrangian Duality; 5. Geometric Interpretation; 6. Quadratic Programming; 7. Duality in Linear Programming; VI Simplex Method; 1. Introduction; 2. Extreme Points of Feasible Set; 3. Preliminaries to Simplex Method; 4. Phase II of Simplex Method; 5. Termination and Cycling; 6. Phase I of Simplex Method; 7. Revised Simplex Method; Bibliography; Index

Sommario/riassunto

A comprehensive introduction to convexity and optimization in  $\mathbb{R}^n$ . This book presents the mathematics of finite dimensional constrained optimization problems. It provides a basis for the further mathematical study of convexity, of more general optimization problems, and of numerical algorithms for the solution of finite dimensional optimization problems. For readers who do not have the requisite background in real analysis, the author provides a chapter covering this material. The text features abundant exercises and problems designed to lead the reader to a fundamental understanding of t