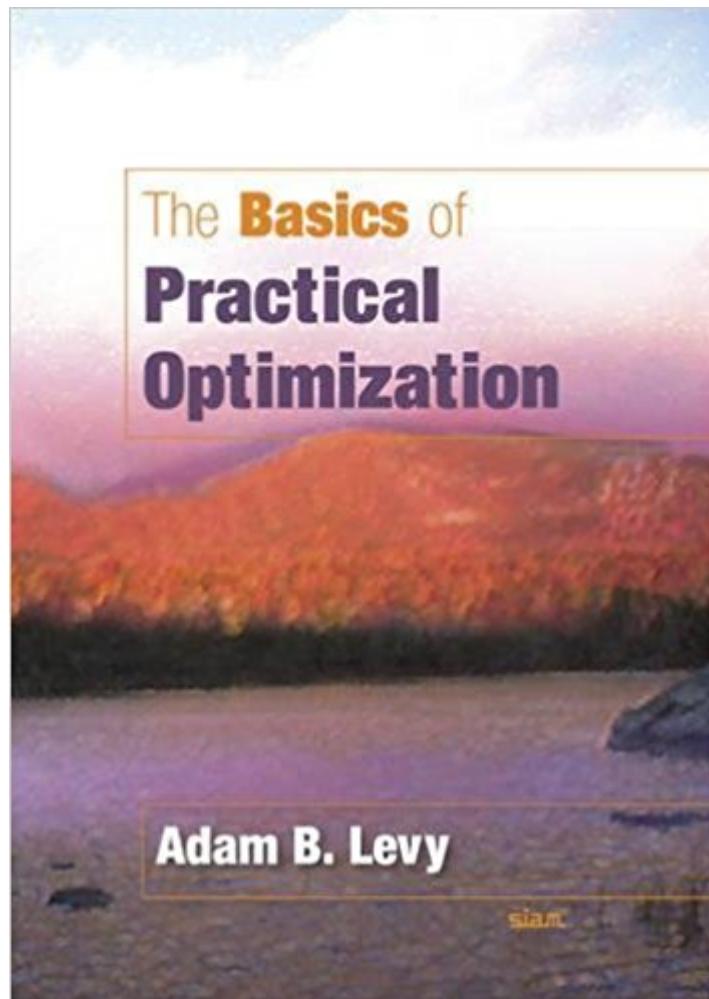


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# The Basics Of Practical Optimization



## Synopsis

This textbook provides undergraduate students with an introduction to optimization and its uses for relevant and realistic problems. The only prerequisite for readers is a basic understanding of multivariable calculus because additional material, such as explanations of matrix tools, are provided in a series of Asides both throughout the text at relevant points and in a handy appendix. The Basics of Practical Optimization presents step-by-step solutions for five prototypical examples that fit the general optimization model, along with instruction on using numerical methods to solve models and making informed use of the results. It also includes information on how to optimize while adjusting the method to accommodate various practical concerns; three fundamentally different approaches to optimizing functions under constraints; and ways to handle the special case when the variables are integers. The author provides four levels of learn-by-doing activities through the book: Exercises meant to be attempted as they are encountered and that are short enough for in-class use; Problems for lengthier in-class work or homework; Computational Problems for homework or a computer lab session; and Implementations usable as collaborative activities in the computer lab over extended periods of time. The accompanying Web site offers the Mathematica notebooks that support the Implementations. Audience: This textbook is appropriate for undergraduate students who have taken a multivariable calculus course. Contents: List of Figures; List of Tables; Preface; Chapter 1: Modeling; Chapter 2: Impractical Optimization; Chapter 3: Basic Practical Optimization; Chapter 4: Some Practical Modifications; Chapter 5: How Methods Are Ranked; Chapter 6: Constraints; Chapter 7: More Practical Modifications; Chapter 8: Integer Variables; Chapter 9: Other Methods; Appendix of Asides; Bibliography; Index

## Book Information

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## Customer Reviews

Using relevant and realistic problems, this book gives undergraduate students an introduction to optimization and its applications. All that readers need is a basic understanding of multivariable calculus. To build on the material in the text, the author provides many learn-by-doing exercises throughout the book.

Adam Levy is Professor and Chair of the Department of Mathematics at Bowdoin College. He was recognized in 1997 with the college's Sydney B. Korofsky prize for excellence in undergraduate teaching and has published over two dozen journal articles on optimization.

This is a nicely written intro to optimization. This book will be ideal to those who have a background in calculus and would like to take the next step. The authors also have a number of 'asides' to help the reader come up to speed on key concepts such as matrices, quadratic functions, eigenvalues/vectors; these only serve as reminder and to establish notation. However, a reader with a strong background in multi-variable calculus will have no problems following the materials presented in the book. Another nice feature is that the author includes a number of short exercises after each key concept, whose answer(s) serve to consolidate the discussion in subsequent paragraphs.

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