

KUSRAEV, A. G. and KUTATELADZE, S. S. *Subdifferentials: theory and applications* (Mathematics and its Applications Vol. 323, Kluwer Academic Publishers, Dordrecht, 1995), ix + 398pp., 0 7923 3389 6, £121.

This book is an advanced treatment of some of the modern developments in the theory of the subdifferential calculus. Much of this is concerned with the study of “convex correspondences”, equivalently multivalued convex mappings. The setting is very general: these are defined on vector spaces and take values in an ordered space with idealized elements $+\infty$ and $-\infty$ adjoined in a specific manner. Applications in this text mean connections with other theoretical aspects.

A very large number of concepts are defined and investigated such as inverse sums, right (left) partial sums, inverse compositions and various convolutions in the first chapter alone. Convex sets are introduced as part of a broader structure, but the gain is offset by the lack of simplicity.

Much background is asked of the reader; for example, in later chapters considerable use is made of nonstandard analysis to define and study extremal problems and local convex approximants.

This book is written for the expert – it is not an introduction to any part of the subject matter. It would benefit from a clear overview in each chapter of the material being presented; the non-expert is lost in the maze of succinctly presented results. End-of-chapter comments give some guide to the literature. The bibliography is comprehensive, containing 434 items.

The authors use a great deal of notation which is hardly memorable (some is such that spilling coffee could be disastrous), so it is nigh on impossible to jump between topics. The table of contents cites a “Symbol Index”, but this was absent in the review copy of the book. This is certainly an essential feature for this text. The length of the subject index would normally be regarded as more than adequate, but it is a little lacking in this text.

The text is the English version of the book originally published in Russian in 1987. The translation is presumably by the authors and is competently done, but phrases sometimes jar and need to be re-read to discover what is being said.

The book is well produced, but its high price will deter sales even to Libraries.

J. R. L. WEBB