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Approximation of functions of several variables and embedding theorems.

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Abstract : The theory of embeddings of classes of differentiable functions of several variables has been intensively expanded during the past two decades, and a number of its fundamental problems have been resolved. But till now these results are to be found in journal articles. This book presents the complete theory of embeddings of the main classes ($W(\substack{p \\ \sup \\ r})$, $H(\substack{p \\ \sup \\ r})$, $B(\substack{p \\ \sup \\ \theta \\ \sup \\ r})$, $L(\substack{p \\ \sup \\ r})$) of differentiable functions given for the entire n -dimensional space $R \substack{n}$. The reader will find in the book the inequalities between partial derivatives in the various contexts that have found application in mathematical physics. Emphasis is placed on problems of compactness, integral representations of

functions of these classes, and problems of the isomorphisms of these classes. In the book the author chiefly employs the method of approximation with exponential type integral functions and trigonometric polynomials. The theory of approximation suitably adapted for these ends is set forth at the outset of the volume. Use of the Bessel-Macdonald integral operator is also essential. The reader will even find in the book remarks given without proof on the embedding of classes of differentiable functions specified for the domains G belongs to $R^{\sup n}$. The reader must be familiar with the fundamentals of Lebesgue integral theory. The book widely employs the concept of the generalized function, but it is clarified with proofs to the extent that this is necessary. (Author)

Descriptors : (*FUNCTIONS, *APPROXIMATION(MATHEMATICS)), POLYNOMIALS, PARTIAL DIFFERENTIAL EQUATIONS, INTEGRAL EQUATIONS, EXPONENTIAL FUNCTIONS, SET THEORY, ALGEBRAIC TOPOLOGY, VECTOR SPACES, BESSEL FUNCTIONS, BANACH SPACE, FUNCTIONAL ANALYSIS, THEOREMS, USSR

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