BOOK REVIEWS

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Schander bases: Behavior and stability, by P. K. Kamthan and M. Gupta. Pitman Monographs in Pure and Applied Mathematics, Longman Scientific and Technical, New York, 514 pp., $79.95. ISBN 0-470-21029-X

1. Basis

A sequence (x_n) in a Banach space X is a *Schauder basis* provided that for every $x \in X$ there is a unique sequence of scalars (a_i) such that

$$x = \sum_{n=1}^{\infty} a_n x_n$$

convergence in the norm topology.

This notion, obviously generalizing the classical notion of basis for a finite dimensional vector space, is due to Schauder [S]. Schauder bases (and certain generalizations of the notion) have played an important role in developing general Banach space theory.

2. Banach

Banach thought enough of the topic (Schauder bases) to devote Chapter VII of his classic monograph *Théorie des opérations linéaires* to the subject. (Albeit a short—six pages—chapter. But all the chapters in this classic work are short!)

Obviously, the existence of a basis imposes structure not enjoyed by all Banach spaces. It is truly trivial that if X has a basis then X must be separable. Perhaps the most important question ever raised about bases—Does every separable Banach space have a Schauder basis?—was posed by Banach himself [B, p. 111]. This