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Leçons d'analyse functionelle, by F. Riesz and B. Sz.-Nagy, Akadémiai Kiadó, Budapest, 8 + 448 pp., about $7.50

This work is superb.

For the field which it covers, it cannot be approached now nor will be soon by other books. It is not presented as a treatise for specialists, the essential purpose of which is to report advanced and complex results. Nor is it written as a textbook for the young student. Its aims are much higher and much more elegant. And in accomplishing these aims its authors have put together a magnificent advanced treatise and a most excellent though not elementary text. The purpose of the work is to set down, within the spirit and context of the undertaking, a certain coherent and central portion of mathematics in final and definite form. And within the spirit of the undertaking, this version is final and correct. Whether it is the only possible such version is another question, the answer to which is not important at this point. The hallmark of the work is its balance and good taste: in the choice of subjects, in the extent and detail in which they are developed, in the methods used to present them, and in the critical question of style and exposition.

The subjects treated are the modern theory of integration and differentiation, and the theory of linear operators which is based upon these concepts. Thus we find discussion of the space L^2 of square integrable functions, of abstract Hilbert space, of the space C of continuous functions. The latter is connected to integration theory by the fundamental correspondence between linear functionals and measures. This leads to a brief treatment of the spaces L^p, $p \geqq 1$, of reflexive spaces, and finally, of Banach spaces. For these various spaces, the operator theory discussed includes integral operators, completely continuous operators in general, completely continuous symmetric (that is, self-adjoint) operators, bounded symmetric operators, unbounded self-adjoint operators, and spectral theory in general Banach spaces.

The method of presentation is a mixture of the inductive and the axiomatic. Thus integration is first developed for the line, then in n-space, and finally abstract integrals and measures are treated.

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E. R. Lorch

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