

surely to the probability that the random walk will never return to the origin. The chapter on discrete parameter Markov chains is remarkable for its elegant and compact presentation of limit theorems, including Orey's theorem, the most important recent result in the theory now seemingly essentially completed. This theorem reads: If $p^{(n)}(i, j)$ is the n -step transition probability matrix of an irreducible (=indecomposable) recurrent aperiodic Markov chain, then for any i, k

$$\lim_{n \rightarrow \infty} \sum_j |p^{(n)}(i, j) - p^{(n)}(k, j)| = 0.$$

The main limit theorem of Kolmogorov: $p^{(n)}(i, j)$ converges as $n \rightarrow \infty$, easily follows. There is a chapter on Brownian motion containing a recent result of Dworetski, Erdős and Kakutani that almost every Brownian path is nowhere differentiable. There is a substantial chapter on invariance theorems, including Donsker's invariance principle, the Doob-Donsker proof of the Kolmogorov-Smirnov theorem and finally a general invariance principle of Skorokhod, the proof of which is only sketched. The author has nearly all the material necessary to establish the recent important result of V. Strassen on the law of iterated logarithm, but he stops short of it. The last chapters are concerned with continuous parameter stochastic processes: martingales, Poisson processes, Markov processes, diffusion. They seem to present a good introduction into a field in which a great deal of research is now being done, by some of the leading probabilists. A parenthetical remark: Breiman's book, unlike Chung's, has an excellent table of contents from which the reader may for himself find out what the book contains.

In conclusion, both works under review can be highly recommended as first-year graduate textbooks; even though in this role we would give a slight edge to Chung's book, a very carefully and lucidly written account by a master of the subject, and a product, the author tells us, of many years of teaching. Breiman's book may be preferred by an instructor who wishes to rapidly introduce a very good class into modern ideas more general than independence; furthermore, a specialist will want to read this book for the rich account it gives of recent developments in fields other than his own. Each book constitutes a very valuable addition to the literature.

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An introduction to harmonic analysis, by Yitzhak Katznelson. Wiley, New York, 1968. 266 pp. \$12.95.

This is a text, on the modern theory of Fourier series and integrals, designed to be used by students who know the basics of real and