examples named after de Rham, Dolbeault, Hodge and Dirac are presented in considerable detail. The embedding proof of the index theorem is outlined along with that of the equivariant index theorem and the fixed point theorem. Various applications of these results are also presented. The book is quite successful in doing what it attempts.

While the index theorem has not yet made it into graduate texts, these two books are a good beginning and given the ongoing importance of the index theorem should be useful to those wanting to learn about it.

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Probabilities and potential, by Claude Dellacherie and Paul-André Meyer, Mathematics Studies, Volume 29, North-Holland Publishing Company, Amsterdam and New York, 1978, xii + 190 pp., $29.00.

In the preface of his 1953 book [3], J. L. Doob wrote "Probability is simply a branch of measure theory, with its own special emphasis and field of application . . . . Using various ingenious devices, one can drop the interpretation of sample sequences and functions as ordinary sequences and functions, and treat probability theory as the study of systems of distribution functions. · · · such a treatment · · · results in a spurious simplification of some parts of the subject, and a genuine distortion of all of it." I believe that today the vast majority of probabilists would agree with Doob's statement of more than a quarter of a century ago. The thought of trying to state, let alone explain, the strong law of large numbers, for example, without using sample sequences seems ludicrous. The mathematical model commonly accepted today for treating sample sequences and functions is measure theory via the Kolmogorov axioms. As long as one deals with sequences most probabilists are happy with the measure theoretic foundations of the subject. However, this sense of contentment is rapidly dissipated when treating sample functions; that is, uncountable families of random variables. This is because, until quite recently, most probabilists were uncomfortable with the type of measure theory that is required to discuss sample functions.

The study of sample functions of a stochastic process has a long and varied history. In [10], Loève has emphasized that Lévy always thought in terms of sample paths and that this approach led to his beautiful results beginning in the middle 1930's on the structure of additive processes, the fine structure of Brownian paths, and the bizarre (at the time they were published in 1951) possibilities for the sample paths of a continuous parameter Markov chain. In spite of Wiener's construction of Brownian motion in the 1920's, there was hardly any theory of continuous parameter stochastic processes in 1935. Beginning about 1936 and culminating in his 1953 book, Doob developed a rigorous foundation for treating such questions. At about the same time Doob and later Snell were establishing the sample function properties of martingales and submartingales which were to be fundamental for later developments. These results were given a definitive treatment in the 1953