and Bibliography of Riemannian Geometry, compiled by Bérard and Berger, with a partial update covering the period since 1982.

The book is not, and is not intended to be, a broad overview of the by now very large topics of direct and inverse problems in Riemannian geometry. It is, however, a clear account of the contributions along the above lines of the author and his collaborators, and some of its material is not in print elsewhere. Altogether, within the framework of its aims, the book conveys a clear account of this interesting work, and comprises, together with the recent book of Chavel [CH] on related topics, a very worthwhile addition to the literature of spectral geometry.

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Intégration et théorie des nombres, by Jean-Loup Mauclaire; preface by S. Iyanagi. Hermann, Paris, 1986, xi + 152 pp., 160F. ISBN 2-7056-6035-6

A function is arithmetic if it is defined on the positive integers. In this review arithmetic functions will be real or complex valued. The scope of this definition is rather wide, and functions of number theoretic interest generally have some structure attached to them. An example is the Dirichlet divisor function $d(n)$, which counts the number of distinct divisors of the integer n. Its values on the first ten integers are 1, 2, 2, 3, 2, 4, 2, 4, 3, 4, and appear roughly increasing. Considered over the range $205 < n \leq 215$ however, we have 4, 6, 10, 4, 16, 2, 6, 4, 4, 4. It is characteristic of functions of number theoretic interest that their successive values sail so erratically about. I begin with a snapshot history of the methods devised in Analytic Number Theory to come to grips with this phenomenon. As in many a family album, some important relations do not get into the picture.

According to Dirichlet, it was Gauss who considered the mean-value

$$M(g,x) = x^{-1} \sum_{n \leq x} g(n) \tag{1}$$