$(1 - x)$ and $(1 - y)$ are replaced by $(1 - x)^\alpha$ and $(1 - y)^\alpha$ $(\alpha \neq 1)$: the limit of the generalized information function when α tends to 1 is the Shannon's information function.

In Chapter VII further generalizations of Rényi's entropy are introduced containing two parameters α, β: if $\beta = 1$ they reduce to Rényi's entropy.

The book of J. Aczél and Z. Daróczy represents the summing-up of a long series of fruitful researches: one has the impression that they have so thoroughly explored the field, that there is little chance for the discovery of really new properties of Shannon's entropy and eventually Rényi's entropy; perhaps this outstanding achievement, discouraging further efforts on the same line, will now stimulate explorations of neighbouring fields, taking account of all the aspects of information out of the scope of the classical theory.

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BULLETIN OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 83, Number 2, March 1977

Differentiation of integrals in R^n, by Miguel de Guzmán, Lecture Notes in Mathematics, no. 481, Springer-Verlag, Berlin, Heidelberg, New York, 1975, xi + 225 pp., \$9.50.

Professor de Guzmán's book concerns itself with material which has come, in recent years, to play a fundamental role in the theories of real and complex analysis, Fourier analysis, and partial differential equations. Maximal functions, covering lemmas and differentiation of integrals seem to be at the core of the modern theory of singular integrals, Littlewood-Paley theory, and H^p spaces, as well as many other areas of great interest.

The starting point of the theory is the consideration of the following simple result:

Given $f \in L^1(R^n)$, we have

$$\lim_{r \to 0} \frac{1}{|B(x; r)|} \int_{B(x;r)} f(y)\, dy = f(x)$$

for a.e. $x \in R^n$. (Here $B(x; r)$ is the ball centered at x of radius r, and $|B(x; r)|$ is its Lebesgue measure.) This result, known as Lebesgue's theorem on the differentiation of the integral, is, however, just the beginning of the theory. For, in order to give their proof of this result, Hardy and Littlewood introduced the maximal operator, M, given by

$$M(f)(x) = \sup_{r>0} \frac{1}{|B(x; r)|} \int_{B(x;r)} |f(y)|\, dy, \qquad f \in L^p(R^n), \qquad 1 \leqslant p \leqslant \infty.$$

This maximal operator, which is of fundamental importance in many areas, turns out to be bounded on $L^p(R^n)$ when $p > 1$, and majorizes some of the most important operators in Fourier analysis. For example, the process of taking Cesàro means of Fourier series or Poisson integrals of functions can be