the very beginnings of the subject through ideals, class numbers etc., and ends with applications to Mersenne primes and diophantine equations. This is achieved with no sacrifice of lucidity.

What is true of this chapter holds to a greater or lesser extent for most chapters. The interested mathematician may approach the material with minimal prior knowledge. The language is classical and the reader will not be impeded by the necessity of having a large mathematical vocabulary. On the other hand, the reader will be amply rewarded with beautiful results of considerable depth and can come away with a sense of satisfaction.

In one of his letters to Sophie Germain, Gauss, referring to number theory, wrote that "the enchanting charms of this sublime science are not revealed except to those who have the courage to delve deeply into them." This book provides an admirable vehicle for so delving.

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The analysis of linear partial differential operators. I, by Lars Hörmander, Grundlehren der mathematischen Wissenschaften, Vol. 256, Springer-Verlag, Berlin, 1983, ix + 391 pp., $39.00. ISBN 3-5401-2104-8

The analysis of linear partial differential operators. II, by Lars Hörmander, Grundlehren der mathematischen Wissenschaften, Vol. 257, Springer-Verlag, Berlin, 1983, viii + 389 pp., $ 49.50. ISBN 3-5401-2139-0

Since the second World War the theory of linear partial differential equations has undergone two major revolutions. The first was the advent, in the late forties, of a formalized theory of "generalized functions". Its starting point was the use of test-functions. The idea was not entirely new; it had been introduced earlier in the theory of Radon measures (in particular, on locally compact groups [**Weil 1940**]) and had something to do with the old quantum mechanics: one could not always assign a value at a point to certain "functions", such as Dirac's, but one could "test" them on suitable sets, or "against" suitable functions. In the most important case the test-functions are smooth (i.e., C^∞) and vanish identically off some compact set. The corresponding generalized functions were called "distributions" in [**Schwartz 1948**]. Distribution theory assimilated many ideas and discoveries of the preceding decades (by Heaviside, Hadamard, Sobolev, Bochner and others). To these it added new ones, of which the most successful were perhaps the now-called Schwartz spaces $\mathcal{S}$, $\mathcal{S}'$ and the theory of Fourier transform of tempered distributions—although again the link between slow (or tempered) growth, the Fourier transform and localization, and, beyond, causality, was not absolutely new, and certainly not to physicists. Schwartz gave a strong functional analysis slant to the theory,