so far have been of limited applicability. This notwithstanding, they are the methods used in $SL_2(\mathbf{R})$. The simplest starts from the Poisson summation formula and has, in various guises, been with us for a long time. It works well for subgroups of SL(2, **Z**), and perhaps for subgroups of SL(n, **Z**) too. Its limitations are recognized, and Lang employs it only for the sake of a quick introduction.

The other method is newer and appeared only after the problem of the analytic continuation of Eisenstein series had been solved for general groups. It has exercised a strange attraction on a number of mathematicians, Lang among them, and acquired somehow a reputation of being more analytic. It is in fact not unrelated to Selberg's method, but this flows easily along a natural course, while that moves through a channel cut by the machinery of perturbation or, more precisely, scattering theory. Scattering theory, to which Faddeev has written an enlightening introduction (translated in J. Mathematical Phys., 1963), is important for its own sake, and may be a useful weapon for the number-theorist, and the rest of us too; if not for use against the Eisenstein series which have, after all, already surrendered, then against stronger, more stubborn foes; so we can be grateful to Lang for pressing it into our hands. Moreover, since it has been easy to forget that, like everything else, Selberg's method had antecedents, it is instructive to place it alongside the methods arising from scattering theory and to note the fraternal likeness. But this is of interest only to the initiated. The beginner should be shown an easy path, free of red herring and leading to some outstanding problems, which for the Eisenstein series are usually in higher dimensions and primarily arithmetic, concerned not with the analytic continuation which is known but with the location of the poles contributing to the spectrum. Their solution probably demands a better understanding of the Euler products associated to automorphic forms and of the intertwining operators and their normalizations.

But we should not forget the purpose of the book, which was not intended to teach the reader everything about SL(2, **R**). It is written by an outsider, although not to mathematics or to exposition, for outsiders, and in consulting his own needs he has probably met theirs. $SL_2(\mathbf{R})$, which introduces the harmonic analysis through the Plancherel formula and the analytic theory of automorphic forms through the Eisenstein series, may take its place alongside the author's other books, which for many of us have been the entrance to topics that could otherwise have remained inaccessible.

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The heat equation, by D. V. Widder, Academic Press, New York, San Francisco, and London, 1975, xiv + 267 pp., $22.50.

The title implies that this is a book about a partial differential equation, and so it is; but it is very different from other books about partial differential equations. Older books used to concentrate on more or less explicit solutions of boundary value problems or, as we are more apt to say nowadays, on algorithms for calculating solutions. Modern books are more likely to con-