3. GÉZA FREUD, *Orthogonale Polynome*, Birkhäuser, Basel, 1969; English transl., Pergamon Press, New York, 1971.

4. JA. L. GERONIMUS & G. SZEGÖ, *Orthogonal Polynomials*, Amer. Math. Soc. Transl. (2), vol. 108, Amer. Math. Soc., Providence, R. I., 1977, pp. 37–130.

5. PAUL G. NEVAI, *Orthogonal Polynomials*, Mem. Amer. Math. Soc., Vol. 18, No. 213, Amer. Math. Soc., Providence, R. I., 1979.

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2[9.00].–PAULO RIBENBOIM, 13 *Lectures on Fermat's Last Theorem*, Springer-Verlag, New York, xi + 302 pp., 24 cm. Price $24.00.

This book will surely become one of the classics on Fermat's Last Theorem. In a very readable style, the author summarizes most of the important work relating to FLT and tries to give the main ideas that go into the proofs. The research has been rather thorough, and each chapter concludes with a long list of references. Starting with the early work on degrees up to seven, and also the results obtained by "elementary" methods, the author then proceeds to Kummer's work. He then treats more recent work, for example that of Wieferich, Mirimanoff, Vandiver, and Krasner. Next, the reader is treated to a discussion of applications of class field theory, linear forms in logarithms, elliptic curves, and congruences. Also included is a discussion of topics that have appeared in this journal, such as the tables of W. Johnson and S. Wagstaff and recent conjectures concerning the distribution of irregular primes and of the index of irregularity. The book concludes with a sometimes light-hearted treatment of variations of FLT: polynomials, differential equations, nonassociative arithmetics, etc. Because of a lack of space, and to enhance readability, proofs are often omitted or only sketched. But the interested reader can always consult the references, or wait for the promised second, more technical volume to be published. Most of the text should be accessible to a mathematician with an undergraduate course in number theory, if certain sections involving algebraic number theory are omitted. Though writing on a subject notorious for its errors, the author seems to be fairly accurate. However, we note two minor mistakes: on page 82 and 98 the words "positive real unit" should be replaced by "real unit" since positivity will vary with the embedding into the reals; on page 208 the formula for the genus should have a 4 instead of a 5.

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3[10.35].–BERNARD CARRÉ, *Graphs and Networks*, Clarendon Press, Oxford, 1979, x + 277 pp., 23cm. Price $36.50 (cloth), $19.50 (ppr.).

This book is a rather unusual entry into the literature on graphs and networks. Its motivation comes from operations research and computer science; thus, its applications include, for instance, critical path analysis, dynamic programming and assigning memory space when compiling a computer program. Its viewpoint is algorithmic and algebraic.

The algorithmic perspective is religiously followed, and a good deal of attention is paid to data structures for implementation. It is surprising, however, that analysis of time complexity is omitted for several algorithms. A good, though somewhat brief, introduction to easy (polynomially bounded) and hard (*NP*-complete or *NP*-hard) problems is included. The algorithmic style is pursued almost to the exclusion of theorems; the latter are merely stated in italics, with no separate numbering. While theorems scare some students, the style of this book may confuse more.

While theorems have only a small part, there is a good deal of mathematical abstraction and notation present. The book starts with an initial chapter of thirty pages on algebraic foundations, introducing binary operations and relations, orderings, and lattices. For such an intuitive subject as graph theory, it is unfortunate that graphs delay their appearance for so long. When they appear, they are "Berge" graphs; that is, all graphs are directed, while some (simple graphs) are directed both ways. The second chapter also introduces algorithms, for finding strong components, traversing trees, and determining Hamiltonian cycles, for instance. Eulerian circuits, however, are confined to an exercise.

The third chapter is the most original and interesting. The author defines "path algebras", with applications to listing paths or elementary paths and finding shortest or most reliable paths. He then demonstrates that such path problems can be expressed as linear equations over the appropriate path algebra. Methods of numerical linear algebra are then modified to solve these equations, leading to a synthesis of several well-known path algorithms.

Chapters four, five, and six are devoted respectively to connectivity, independent sets, covers and colorations, and network flow problems. Again, the emphasis is on algorithms. There is, for instance, no discussion of planarity or the 4-color theorem.

Each chapter concludes with additional notes and references that appear to be quite useful.

The book is intended for advanced undergraduate or beginning graduate courses. It is most accessible to students with some background in modern algebra and provides a fairly comprehensive description of algorithms for graph and network problems. To this reviewer, it seems that those students familiar with abstract algebra will be interested in more mathematical development, while those more interested in algorithms will be less inclined to the algebraic approach.

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4[2.00].—Irving Allen Dodes, *Numerical Analysis for Computer Science*, North-Holland, New York, 1978, ix + 618 pp., 26 cm. Price $19.95.

Since the present text covers typical subject matter to be found in many numerical analysis texts, the reviewer must try to discover features of the book which explain its title. The computer science curriculum (cf. *Comm. ACM*, March, 1979) lists two courses in numerical analysis as electives only. Although this text