which satisfy suitable initial or boundary conditions are known to exhibit a maximum principle property. A detailed study of this phenomenon (mostly in the two variables case) is the subject matter of the last chapter.

In conclusion, the book gives a very readable account of the role of maximum principles in differential equations. It should be read by anyone interested in this elementary yet basic and fascinating subject. The book which contains many examples and exercises is also very suitable as a text book.

SHMUEL AGMON

An introduction to number theory by Harold Stark, Chicago, Markham Publishing Co., 1970.

This book, according to the preface, is intended for future high school and junior college mathematics teachers, rather than for budding research mathematicians. As a result, the book has a somewhat different tone from many other texts on elementary number theory. For one thing, it is a lot more fun to read.

Much of the material in the book is fairly standard; besides an introductory chapter, there are chapters on the Euclidean algorithm and its consequences, on congruences (through primitive roots), and on some simple Diophantine equations. A chapter on rational and irrational numbers concludes with Liouville's theorem (plus a list of later results). The last two chapters, on continued fractions and quadratic fields, are somewhat harder. The continued fraction chapter starts off easily enough, but concludes with material on periodic continued fractions and Pell's equation; the material on quadratic fields amounts to a brief introduction to the phenomena present in algebraic number fields. There is one other chapter, on magic squares. Stark gives general procedure (the uniform step method) for putting numbers in squares, and then gets conditions under which the resulting square is magic. I was somewhat bothered by the definition of "magic"; it seems to me that any magic square worthy of the name should have the main diagonals add up to the magic sum, but Stark imposes conditions only on the rows and columns. His method makes the analysis easier, though. Stark does discuss diabolic (or pandiagonal) squares, in which all diagonals (main and broken) add up to the magic sum. There are a few other eccentricities in his treatment; for instance, he does not require that the numbers in a magic square lie in separate squares.

One topic which is conspicuously absent is quadratic reciprocity. Stark states in his preface that he feels it is a topic better left out;

only after students have some experience with its applications will they appreciate it. I am not convinced. It would not be hard to give some examples of the theorem to illustrate its usefulness. And the theorem is too beautiful to omit.

There are historical and other notes sprinkled through the book. I noticed only one error in them; Euclid showed that numbers of the form $2^{p-1}(2^p-1)$, where 2^p-1 is prime, are perfect numbers, but not (as stated on p. 42) that all even perfect numbers are of that form. (The converse half was proved by Euler.) A number of the comments are meant to drive home the point that in mathematics you need a proof to be sure of anything. Some examples in Chapter 7 show that you cannot always be very sure of proofs, either.

The book also contains lots of problems, some very easy and some more difficult. A few of the results are actually useful in everyday life. One problem on congruences amounts to constructing a perpetual calendar; a problem in the first chapter gives a clever way of changing fractions to decimals.

This book has no startling new ways of organizing the material of elementary number theory; it would be unreasonable to expect anything of the sort. What it does have is a good deal of interesting peripheral material and a style which makes reading it a pleasure. I found browsing through the book very enjoyable. Perhaps some students will, too.

LAWRENCE CORWIN