The book is well organized and well written and, as well as dealing with the ASP, it gives an excellent survey of polyhedral combinatorics, although the reader may wish to fill in the background by consulting some of the references below. The theory of the book, due to Grötschel, Jünger and Reinelt, was awarded the IBM Computer Application Prize for 1984.

REFERENCES

1. LAWLER, E.L.
   'Combinatorial Optimization: Networks and Matroids',
   Holt, Rinehart and Winston (1976).

2. PAPADIMITRON, C.H. and STEIGLITZ, K.
   'Combinatorial Optimisation: Algorithms and Complexity',
   Prentice Hall (1982).

3. SALKIN, H.M.
   'Integer Programming', Addison-Wesley (1975).

4. GAREY, M.R. and JOHNSON, D.S.
   'Computers and Intractability: A Guide to the Theory of
   NP-Completeness', Freeman, San Francisco (1979).

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BOOKS RECEIVED

"MATHEMATICAL FORMULAE"   (Fourth Edition)

By S. Barnett and T.M. Cronin

Published by Longman, Essex, 1986.   77 pp. Stg £3.95.
ISBN 0-582-44758-5

A reference work providing a compact collection of mathematical formulae designed specifically for engineering and science students at university or college.   For this fourth edition the authors have added new sections covering such topics as z-transforms, orthogonal polynomials and Walsh functions; other additions include further properties of matrices and a useful list of symbols and notation.   The tables of logarithms have been replaced by frequently used statistical tables.

"ON THE EXISTENCE OF NATURAL NON-TOPOLOGICAL, FUZZY TOPOLOGICAL SPACES"

By R. Lowen

Published by Heldermann Verlag, Berlin, 1985.   xvi + 183 pp.
DM 34.00   ISBN 3-88538-211-3

This monograph presents a unified study of several important examples of natural fuzzy topological spaces; the space of probability measures on a separable metrizable topological space, the space of Radon probability measures on a linearly ordered topological space, and the hyperspace of uppersemicontinuous fuzzy sets on a uniform space.

It is shown how these spaces can be canonically equipped with non-topological fuzzy topologies, and in each case the richness of information contained in these fuzzy structures when compared to classical structures is demonstrated.

A first chapter is provided which contains sufficient concepts from abstract fuzzy topology to make the book self-contained.

"ABELIAN VARIETIES"   (Second Edition)

By D. Mumford

Published by Oxford University Press, India, 1986.   vii + 279 pp.   Stg £7.50.   ISBN 0-19-560528-4.

This book is a systematic account of the basic results about abelian varieties.   It includes an exposition, on the one hand, of the analytic methods and results applicable when the ground field k is the complex field C and, on the other hand, of the scheme-theoretic methods and results used to deal with inseparable isogenies when the ground field k has characteristic p.

The revised second edition contains, in addition, appendices on "The Theorem of Tate" and the "Mordell-Weil Theorem".

PROBLEM PAGE

First item this time is one of those intriguing problems which is often solved more easily by non-mathematicians!   I heard it from Richard Bumby who traces it back to John Conway.

1.   Find the next entry in the following sequence:

$$1, 11, 21, 1211, 111221, 312211, \ldots .$$

Here is another problem with a simple solution which is not so simple to discover.

2.   Find an infinite family of pairs of distinct integers m, n such that:

m, n have the same prime factors, and

$m-1, n-1$ have the same prime factors.

Now for the solutions to some earlier problems, from March 1986.

1.   How long is the recurring block of digits in $(0.\dot{0}0\dot{1})^2$?

I first heard this problem from David Fowler, who uses it as an example to show that simple arithmetic can be surprisingly tricky.

Many people's first guess at the answer is 6 digits or 9 digits, but in fact the recurring block has 2997 digits! To be precise:

$$(0.\dot{0}0\dot{1})^2 = 0.\dot{0}00001002 \ldots 996997\dot{9}99.$$

In case you think that there is a misprint here, the string 998 is indeed absent.