

by N. N. Vorob'ev [2]. Thus, Vajda's book, which is longer than both of these books combined, is a welcome addition to the literature of the subject.

The introduction lists some problems in which Fibonacci numbers arise, from biology to computer science and from poetry to probability. In the main body of the book, scores of identities involving Fibonacci and Lucas numbers are derived. The important ones are numbered and repeated at the end of the book for easy reference. Some of the topics considered are Pell's equation, paradoxical dissection of rectangles, the golden section, finite sums involving Fibonacci and Lucas numbers and binomial coefficients, divisibility properties, distribution of Fibonacci numbers modulo m , search for extrema of real functions, and analysis of games. One chapter was written by B. W. Conolly; it deals with *Meta-Fibonacci sequences* such as $H(1) = H(2) = 1$, $H(n) = H(n - H(n - 1)) + H(n - H(n - 2))$ for $n > 2$. An appendix gives results from number theory which are used in the main text.

The reader should beware of many typographical errors and even a few factual errors. For example, formula (77) on p. 60 states that

$$\sum_{i=1}^{\infty} 1/F_i = 3 + \sigma = 4 - \tau = \frac{7 - \sqrt{5}}{2}.$$

In fact, it is a famous unsolved problem to evaluate this sum in closed form or to decide whether it is transcendental. The proof which follows (77) actually demonstrates the true formula

$$\sum_{i=0}^{\infty} 1/F_{2^i} = \frac{7 - \sqrt{5}}{2}.$$

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1. V. E. Hoggatt, Jr., *Fibonacci and Lucas numbers*, Houghton Mifflin, New York, 1969.
2. N. N. Vorob'ev, *The Fibonacci numbers*, Translated from Russian by Halina Moss, Blaisdell, New York, 1961.

22[65-06, 65L05, 65P05].—R. E. BANK, R. BULIRSCH & K. MERTEN (Editors), *Mathematical Modelling and Simulation of Electrical Circuits and Semiconductor Devices*, International Series of Numerical Mathematics, Vol. 93, Birkhäuser, Basel, 1990, xv + 297 pp., 24 cm. Price \$59.00.

These are the proceedings of a conference held at the Mathematics Research Institute in Oberwolfach, October 30–November 5, 1988. There are eight contributions on circuit simulation, most of them dealing with the numerical treatment of differential-algebraic equations, and 13 contributions on device

simulation, discussing the numerical solution of the semiconductor equations by finite element, discretization, linearization, and other techniques.

W. G.

23[65-06, 65F10].—DAVID R. KINCAID & LINDA J. HAYES (Editors), *Iterative Methods for Large Linear Systems*, Academic Press, Boston, 1990, xxx + 319 pp., 23½ cm. Price \$49.95.

This book contains 17 lectures presented at a conference held October 19–21, 1988, at the University of Texas at Austin, honoring David M. Young, Jr. on the occasion of his 65th birthday. Surveying a wide spectrum of topics in iterative methods—from the analysis of preconditioners to issues of implementation on vector and parallel computers—this volume is an impressive and worthy tribute to one of the pioneers of the field.

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