

Resources...

by Ethel Breuche

... a review of *Excursions in Modern Mathematics* by Peter Tannenbaum/Robert Arnold, Prentice Hall, 1992.

I used this text as a resource book for the last month when I had the opportunity to introduce topics in discrete math in my calculus class.

Based upon my only using Part 1 (The Mathematics of Social Choice), I feel that this text is wonderfully **rich**. It is rich with examples and simple and thorough explanations. It is rich in discussion and exploration. Most of all it is rich in exercises at the end of each chapter in which the problems are divided into *Walking, Jogging, and Running*. As the titles imply, the problems increase in level of difficulty and creative problem solving. Some chapters are followed by an additional appendix of information usually referred to in the chapter or one of the exercises. For example, in the voting theory section, the voting scheme for the nominations for the Academy Awards is described in detail. Every chapter offers references for further research and readings. The text is written with deliberate thoughtfulness with regard to racial and gender equity.

As the title states, the text offers a collection of "trips" into four main topics of discrete math which include: Part 1--*The Mathematics of Social Choice* (Election Theory, Power Measurement, Fair Division), Part 2--*Management Science* (Euler Circuits, Traveling Salesman Problem, Hamilton circuits, Minimum Network Problems, Spanning Trees, Scheduling Problems), Part 3--*Growth and Symmetry* (Spiral Growth, Growth of Population, Symmetry of Motion, Symmetry of Scales and Fractals), and Part 4--*Statistics*.

The authors have succeeded in making the connection between mathematics and down-to-earth, concrete real-life problems. In general, the choice of topics is such that a heavy mathematical background is not needed. This material although straightforward is nevertheless not necessarily easy nor superficial, and much of the mathematics in the book has been discovered in this century.

Whether using the book as a resource or as a classroom text, I cannot praise it enough. Although written for a college-level liberal arts math course, high school college-intending juniors and seniors whose reading ability is average or above can use this text as well.

The instructor's manual is divided into *Notes and Comments, Solutions to Exercises* and a *Test Bank of Multiple Choice* questions for each chapter and final exams. The Notes and Comments offer everything from suggestions for class activities to suggestions for special projects. The test bank of multiple choice questions are relatively easy; these should not be used as the sole method of assessment in the classroom. Computer software will be available shortly. A supplement of recent New York Times articles that are appropriate for various topics in the text is also available. ■

Resources...

by Anthony Piccolino

... a review of *For All Practical Purposes* by Lynn A. Steen et. al., COMAP, W.H. Freeman Co., 1988.

If you are looking for a textbook which addresses real-life situations, emphasizes mathematical modeling, encourages students to make mathematical connections, and devotes extraordinary efforts to changing students' narrow view of mathematics, then FAPP, published by W.H. Freeman & Co., is the book of choice for you and your students.

For three years, I taught a mathematics elective course to high school seniors using this textbook. Many of the students enrolled in this course would normally have taken no mathematics course as seniors. Most of the students I had over the three-year period were fascinated by the topics in the text and the accompanying videos. One of my students remarked, "It doesn't look like a math textbook---the chapters deal with topics that actually interest me!"

Indeed they do! *For All Practical Purposes* covers a broad range of topics including graph theory, probability and statistics, voting schemes, fair division, apportionment, decision-making, game theory, fractals, and computer graphics in a style that makes for enjoyable reading for the student. Each strand in the textbook is accompanied by an overview video and each chapter is accompanied by a 28 minute video focusing on the major highlights of the chapter.

Each chapter in the text is written in a lucid and readable style complemented by eye-catching "spotlights" which focus on human-interest aspects of the topic being discussed. The exercise set is not just a collection of exercises which ask students to model what was covered in exposition, but also contains a collection of problems for which the student must go beyond the text material and utilize a variety of problem-solving strategies. Each chapter includes a vocabulary review list and a list of suggested readings.

I found this book to be most effective when used in conjunction with the 26-program video series of the same name. The animation and the delivery style are wonderfully motivating and give students an excellent sense of the "big picture" for each chapter before having students delve into various detailed aspects of the chapter. In addition to the videos, the text supplements include an excellent instructor's guide and a telecourse guide to accompany the videos.

Although the text contains more material than can be covered in one semester, there is a wide variety of topics from which the instructor can choose. A good choice for a one-semester introduction to discrete math could include: Chapters 1&2 (graph theory), Chapter 3 (planning and scheduling), Chapter 4 (linear programming), Chapter 9 (social choice), Chapter 10 (weighted voting systems, measuring power), Chapter 11 (fair division and apportionments), Chapter 12 (game theory), and Chapter 17 (patterns).

I recommend this book with great enthusiasm! ■