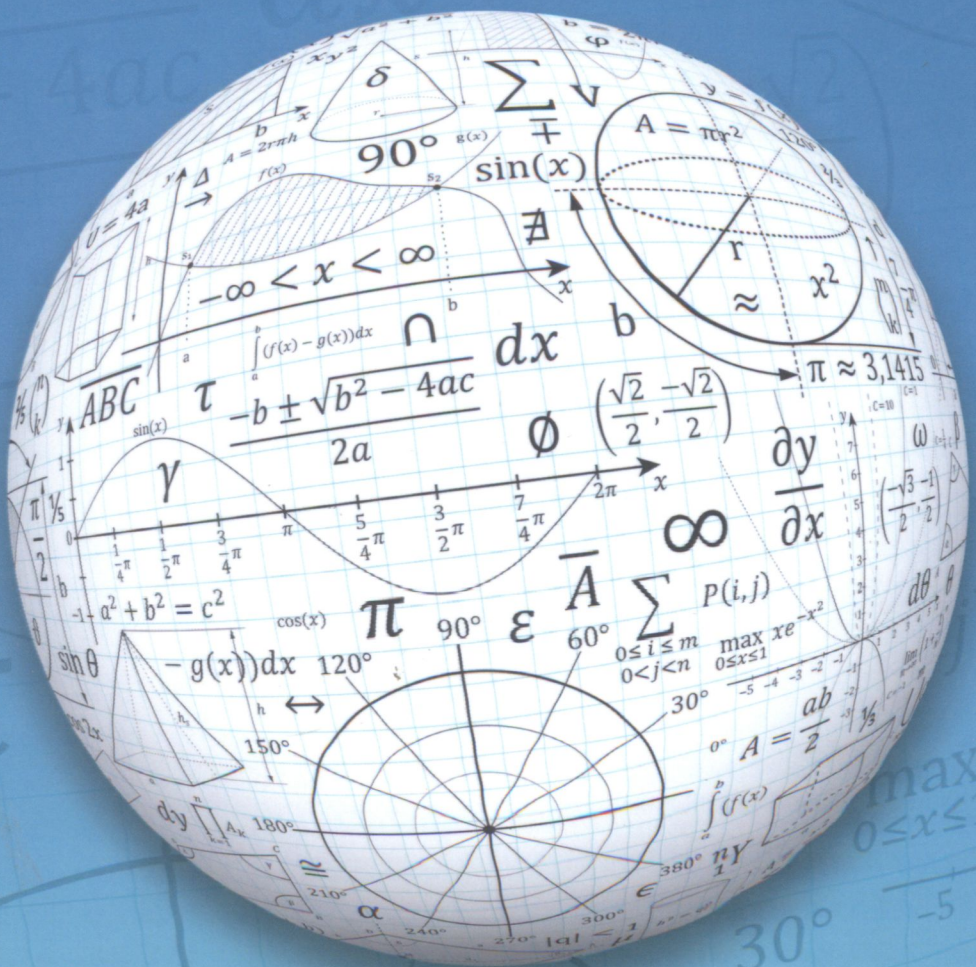
EXPANDING MATHEMATICAL TOOLBOX:

Interweaving Topics, Problems, and Solutions

Boris Pritsker



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This book offers several topics from different mathematical disciplines and shows how closely they are related. The purpose of the book is to direct the attention of readers who have an interest in and talent for mathematics to engaging and thought-provoking problems that should help them change their ways of thinking, entice further exploration, and possibly lead to independent research and projects in mathematics. In spite of the many challenging problems, most solutions require no more than a basic knowledge covered in a high-school math curriculum.

To shed new light on a deeper appreciation for mathematical relationships, the problems are selected to demonstrate techniques involving a variety of mathematical ideas. Included are some interesting applications of trigonometry, vector algebra and Cartesian coordinate system techniques, in addition to geometrical constructions and inversion in solving mechanical engineering problems and in studying models explaining non-Euclidean geometries.

Expanding Mathematical Toolbox: Interweaving Topics, Problems, and Solutions is primarily directed at secondary school teachers and college professors. The book will be useful in teaching mathematical reasoning because it emphasizes how to teach students to think creatively and strategically and how to make connections between math disciplines. The text also can be used as a resource for preparing for mathematics Olympiads. In addition, it is aimed at all readers who want to study mathematics, gain a deeper understanding and enhance their problem-solving abilities. Readers will find fresh ideas and topics offering unexpected insights, new skills to expand their horizons in math studies, and an appreciation for the beauty of mathematics.

MATHEMATICS

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