Mathematics by Experiment

Plausible Reasoning in the 21st Century

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“Experimental mathematics is here to stay. The reader who wants to get an introduction to this exciting approach to doing mathematics can do no better than (this book).”
—Notices of the American Mathematical Society

“Let me cut to the chase, every mathematics library requires a copy of this book…. Every supervisor of higher degree students requires a copy on their shelf. Welcome to the rich world of computer-supported mathematics!”
—Mathematical Reviews

Mathematicians have always used experiments and visualization to explore new ideas and ways to prove them.

Using examples that truly represent the experimental methodology, this book provides the historical context of, and rationale behind, experimental mathematics. It shows how today, the use advanced computing technology provides mathematicians with an amazing, previously unimaginable “laboratory,” in which examples can be analyzed, new ideas tested, and patterns discovered.

This is a perfect introduction to the history and current state of research and technology in the growing field of experimental mathematics. In fact, it is an indication of that growth that this second edition contains over one hundred pages describing new research since the publication of the first edition.

For those interested in further examples and insights, the book Experimentation in Mathematics: Computational Paths to Discovery is highly recommended.