

Preface

▣ FROM THE AUTHOR

I was raised on the island of Oahu, and was a boy of four when Hawaii celebrated its statehood. From Laie Elementary to my graduation from the University of Hawaii, my educational experience was hugely cosmopolitan. Every day was filled with teachers and fellow students from every race, language, culture, and country imaginable, and this experience made an indelible impression on my view of the world. I can only hope that this exposure to different views and new perspectives contributed to an ability to connect with a diverse audience. It has certainly instilled the desire to communicate effectively with students from all walks of life—students like yours. Even my home experience helped to mold my thinking in this direction, because my education at home was closely connected to my public education. You see, Mom and Dad were both teachers. Mom taught English and Dad, as fate would have it, held advanced degrees in physics, chemistry, and . . . mathematics. But where my father was well known, well respected, and a talented mathematician, I was no prodigy and had to work very hard to see the connections so necessary for success in mathematics. In many ways, my writing is born of this experience, as it seemed to me that many texts offered too scant a framework to build concepts, too terse a development to make connections, and insufficient support in their exercise sets to develop long-term retention or foster a love of mathematics. To this end I've adopted a mantra of sorts, that being, "If you want more students to reach the top, you gotta put a few more rungs on the ladder." These are some of the things that have contributed to the text's unique and engaging style, and I hope in the end, to its widespread appeal.

Chapter Overview

The organization and pedagogy of each chapter support an approach sustained throughout the text, that of laying a firm foundation, building a solid framework, and providing strong connections. In the end, you'll have a beautiful, strong, and lasting structure, designed to support further learning opportunities. Each chapter also offers *Mid-Chapter Checks*, and contains the features *Reinforcing Basic Concepts* and *Strengthening Core Skills*, all designed to support student efforts and build long-term retention. The *Summary and Concept Reviews* offer on-the-spot, structured review exercises, while the *Mixed Review* gives students the opportunity to decide among available solution strategies. All *Practice Tests* have been carefully crafted to match the tone, type, and variety of exercises introduced in the chapter, with the *Cumulative Reviews* closely linked to the *Maintaining Your Skills* feature found in every section. Finally, the *Calculator Exploration and Discovery* feature, well . . . it does just that, offering students the opportunity to go beyond what is possible with paper and pencil alone.

Section Overview

Every section begins by putting some perspective on upcoming material while placing it in the context of the “larger picture.” Objectives for the section are clearly laid out. The *Point of Interest* features were carefully researched and help to color the mathematical landscape, or make it more closely connected. The exposition has a smooth and conversational style, and includes helpful hints, mathematical connections, cautions, and opportunities for further exploration. Examples were carefully chosen to weave a tight-knit fabric, and everywhere possible, to link concepts and topics under discussion to real-world experience. A wealth of exercises supports the section’s main ideas, and due to their range of difficulty, there is very strong support for weaker students, while advanced students are challenged to reach even further. Each exercise set includes the following categories: *Concepts and Vocabulary*; *Developing Your Skills*; *Working with Formulas*; *Applications*; *Writing, Research, and Decision Making*; *Extending the Concept*; and *Maintaining Your Skills*; all carefully planned, sequenced, and thought out. The majority of reviewers seemed to think that the applications were first-rate, a staple of this text, and one of its strongest, most appealing features.

Technology Overview

Writing a text that recognizes the diversity that exists among teaching methods and philosophies was a very difficult task. While the majority of the text can in fact be taught with minimal calculator use, there is an abundance of resources for teachers that advocate its total integration into the curriculum. Almost every section contains a detailed *Technology Highlight*, every chapter a *Calculator Exploration and Discovery* feature, and calculator use is demonstrated at appropriate times and in appropriate ways throughout. For the far greater part, an instructor can use graphing and calculating technology where and how they see fit and feel supported by the text. Additionally, there are a number of on-line features and supplements that encourage further mathematical exploration, additional support for the use of graphing and programming technology, with substantive and meaningful student collaborations using the *Mathematics in Action* feature available at www.mhhe.com/coburn.

Summary and Conclusion

You have in your hands a powerful tool with numerous features. All of your favorite and familiar features are there, to be used in support of your own unique style, background, and goals. The additional features are closely linked and easily accessible, enabling you to try new ideas and extend others. It is our hope that this textbook and its optional supplements provide all the tools you need to teach the course you’ve always wanted to teach. Writing these texts was one of the most daunting and challenging experiences of my life, particularly with an 8-year-old daughter often sitting in my lap as I typed, and the twins making off with my calculators so they could draw pretty graphs. But as you might imagine, in undertaking an endeavor of this scope and magnitude, I was blessed to experience the thrill of discovery and rediscovery a thousand times. I’d like to conclude by soliciting your help. As hard as we’ve worked on this project, and as proud as our McGraw-Hill team is of the result, we know there is room for improvement. Our reviewers have proven many times over there is a wealth of untapped ideas, new perspectives, and alternative approaches that can help bring a new and higher level of clarity to the teaching and learning of mathematics. Please let us know how we can make a good thing better.

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