

MATHEMATICS

2018 ACADEMIC CATALOG



PREMIER
Educational
Resources



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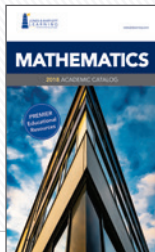


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ENHANCE TEACHING AND LEARNING WITH STUDENT AND INSTRUCTOR SUPPORT MATERIALS

Student Resources:

To meet the needs of today's students, we have developed numerous interactive and engaging learning resources. Look for Student Resources listed under specific titles to see our offerings.

- CW = Navigate Companion Website
- LM = Lab Manual
- SG = Student Study Guide
- SM = Student Solutions Manual
- SR = Student Resource Manual
- WA = WebAssign

Instructor Resources:

- AR = Additional Resources
- CSM = Complete Solutions Manual
- IB = Image Bank
- IM = Instructor's Manual
- ISM = Instructor's Solutions Manual
- PP = Presentations in PowerPoint Format
- TB = Test Bank
- WA = WebAssign

PROVIDING THE LATEST IN ONLINE LEARNING & ASSESSMENT

WebAssign is the leading provider of powerful online instructional tools for faculty and students. More than just a homework grading system, WebAssign

delivers secure online testing, customizable pre-coded questions from a wide range of our math textbooks, and unparalleled customer service.

Every course design has its challenges, every teacher has their own pedagogical goals, and every student has a personal learning style. That's why WebAssign allows you to teach with easy-to-use tools that work right out of the box, or can be fully customized to meet your course needs.

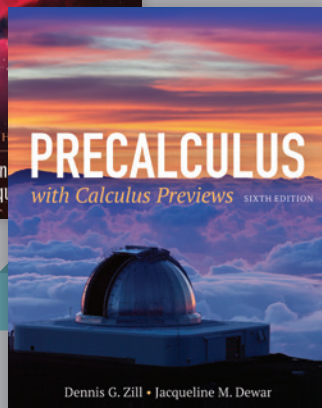
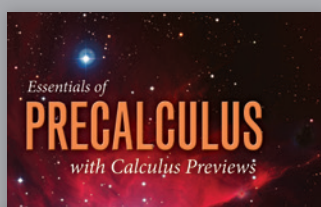
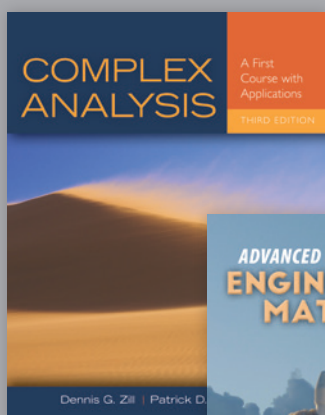
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Dennis G. Zill Loyola Marymount University



Dennis G. Zill received a PhD in Applied Mathematics from Iowa State University, and is a former professor of Mathematics at Loyola Marymount University in Los Angeles, Loras College in Iowa, and California Polytechnic State University. He is also the former chair of the Mathematics department at Loyola Marymount University, where he currently holds a rank as Professor Emeritus of Mathematics. Zill holds interests in astronomy, modern literature, music, golf, and good wine, while his research interests include Special Functions, Differential Equations, Integral Transformations, and Complex Analysis.

Precalculus with Calculus Previews

SIXTH EDITION

Dennis G. Zill, Loyola Marymount University
Jacqueline M. Dewar, Loyola Marymount University

Building off the success of Dennis G. Zill and Jacqueline M. Dewar's popular *Essentials* version, the new sixth edition of *Precalculus with Calculus Previews* continues to include all of the outstanding features and learning tools found in the original text while incorporating additional topics of coverage that some courses may require. With a continued effort to keep the text complete, yet concise, the authors have expanded the number of chapters making the text a clear choice for many mainstream courses. Additional material includes rotation of conics in the rectangular coordinate system, sequences and series, mathematical induction, the Binomial Theorem, systems of equations, partial fractions, systems of inequalities, a brief introduction to counting and probability, and a full discussion of complex numbers.

NEW & KEY FEATURES

- Increased number of student aids throughout the text including examples, figures, marginal annotations, in-example guideline annotations, and *Notes from the Classroom*
- Many sections have been rewritten to increase clarity and improve student understanding
- Increased number of **Calculator/Computer Problems** and **For Discussion Problems** throughout the exercise sets
- An expanded **Final Examination** consists of fill-in-the-blank questions, true/false questions, and review exercises
- New section on **Functions Defined Implicitly** (Section 2.7)
- Updated and expanded **WebAssign** Online Homework and Grading System

ISBN: 978-1-284-07726-1 • Hardcover • 664 Pages • © 2017

+ **Instructor Resources:** IB, CSM, TB, WA

+ **Student Resources:** SR, WA

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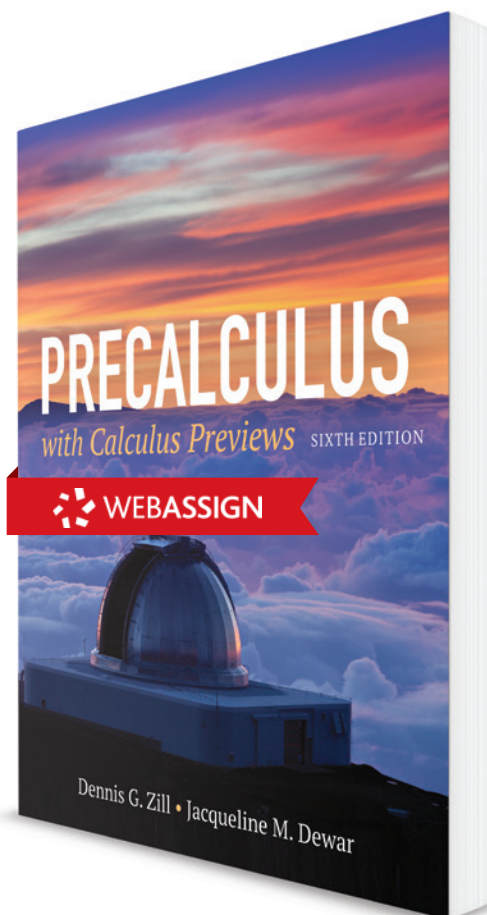


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Chapter 6	Exponential and Logarithmic Functions
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Appendix A	Complex Numbers
Appendix B	Additional Tests for Zeros of a Polynomial Function
Appendix C	Formulas from Geometry
	Answers to Selected Odd-Numbered Problems

Essentials of Precalculus with Calculus Previews

SIXTH EDITION

Dennis G. Zill, Loyola Marymount University
Jacqueline M. Dewar, Loyola Marymount University

Essentials of Precalculus with Calculus Previews, Sixth Edition is an ideal undergraduate text to help students successfully transition into a future course in calculus. The Sixth Edition of this best-selling text presents the fundamental mathematics used in a typical calculus sequence in a focused and readable format. Dennis G. Zill's concise, yet eloquent, writing style allows instructors to cover the entire text in one semester. *Essentials of Precalculus with Calculus Previews, Sixth Edition* uses a vibrant full-color design to illuminate key concepts and improves students' comprehension of graphs and figures. This text also includes a valuable collection of student and instructor resources, making it a complete teaching and learning package.

KEY FEATURES:

- New sections on implicitly defined functions and Product-to-Sum and Sum-to-Product trigonometric identities
- Expanded discussion of applications of right triangles, including the addition of new problems designed to pique student interest
- Increased emphasis on solving equations involving exponential and logarithmic functions
- The discussion of the Laws of Sines and the Law of Cosines are now separated into two sections to facilitate and increase student comprehension
- Provides a complete teaching and learning program with numerous student and instructor resources, including the Student Resource Manual, WebAssign, Complete Instructor Solutions Manual, and Image Bank
- Updated and expanded WebAssign Online Homework and Grading System with comprehensive questions that facilitate learning

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+ **Student Resources:** SR, WA

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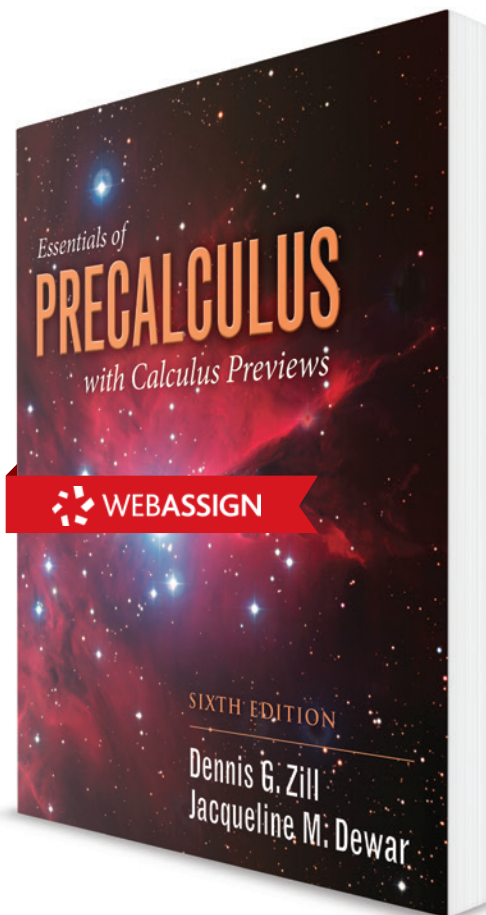


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- Chapter 6 Conic Sections
- Final Examination
- Answers to Selected Odd-Numbered Problems

Advanced Engineering Mathematics

SIXTH EDITION

Dennis G. Zill, Loyola Marymount University

Modern and comprehensive, the new sixth edition of award-winning author, Dennis G. Zill's *Advanced Engineering Mathematics* is a compendium of topics that are most often covered in courses in engineering mathematics, and is extremely flexible to meet the unique needs of courses ranging from ordinary differential equations, to vector calculus, to partial differential equations. A key strength of this best-selling text is the author's emphasis on differential equations as mathematical models, discussing the constructs and pitfalls of each. An accessible writing style and robust pedagogical aids guide students through difficult concepts with thoughtful explanations, clear examples, interesting applications, and contributed project problems.

KEY FEATURES

- **Enhanced** - Available with WebAssign Online Homework and Grading System, which includes thousands of new problems for this edition
- **NEW** - Chapters on differential equations include many new applications and problems
- **NEW** - Incorporates a new emphasis on integral-defined solutions of differential equations
- **Updated** - An updated design with new art and photos throughout the text provides an enhanced look and feel
- **NEW** - Additional *Remarks* throughout the text provide added clarity to concepts presented in the chapter
- **Student Favorite** - Includes eight contributed applied project problems spread throughout the text, including an in-depth discussion of the mathematics and history of the Paris Guns of World War I



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NEW
EDITION



ISBN: 978-1-284-10590-2 • Hardcover with Access Code • 1024 pages • © 2018

+ Instructor Resources: AR, IB, PP, CSM, TB, WA

+ Student Resources: CW, SM, WA

Print with WebAssign ISBN: 978-1-284-12453-8

Print with Student Solutions Manual ISBN:
978-1-284-12454-5

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Navigate Companion Website

Every new print copy includes access to the Navigate Student Companion Website where students will find a wealth of learning and study tools to help them succeed in their course, including:

- **Projects and Application Essays** contributed by experts in the field
- Two additional chapters on **Probability** and **Statistics**

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- Chapter 17 Functions of a Complex Variable
- Chapter 18 Integration in the Complex Plane
- Chapter 19 Series and Residues
- Chapter 20 Conformal Mappings

STUDENT & INSTRUCTOR RESOURCES

STUDENT RESOURCES

Student Solutions Manual: This manual includes answers to every third exercise from each chapter in the text. This enables students to assess their progress and understanding while encouraging them to find solutions on their own.

WebAssign: Bundle WebAssign with the text

and provide your students with thousands of coded questions!

Navigate Companion Website: Included with every new print copy of the text, this resource provides additional chapter material and project sets.

Questions? Contact your Account Specialist: go.jblearning.com/FindYourRep

Essentials of Discrete Mathematics

THIRD EDITION

David J. Hunter, Westmont College

Written for the one-term course, *Essentials of Discrete Mathematics, Third Edition* is designed to serve computer science and mathematics majors, as well as students from a wide range of other disciplines. The mathematical material is organized around five types of thinking: logical, relational, recursive, quantitative, and analytical. This presentation results in a coherent outline that steadily builds upon mathematical sophistication. Graphs are introduced early and referred to throughout the text, providing a richer context for examples and applications. Algorithms are presented near the end of the text, after students have acquired the skills and experience needed to analyze them. The final chapter emphasizes the multidisciplinary approach and contains case studies that integrate the fields of biology, sociology, linguistics, economics, and music.

KEY FEATURES

- **NEW – Student Inquiry Problems**, found at the beginning of each section, are designed to introduce and motivate the material in the section that follows. Over 200 new problems throughout the text!
- **NEW – Incorporates new content on Graph Theory**
- Coverage of algorithms appropriate for computer science majors, as well as students with no previous programming experience
- Careful attention to mathematical logic and proof techniques
- Updated and expanded with **WebAssign Online Homework and Grading System**, which includes over 300 new exercises

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⊕ **Instructor Resources:** AR, IM, PP, ISM, WA

⊕ **Student Resources:** WA

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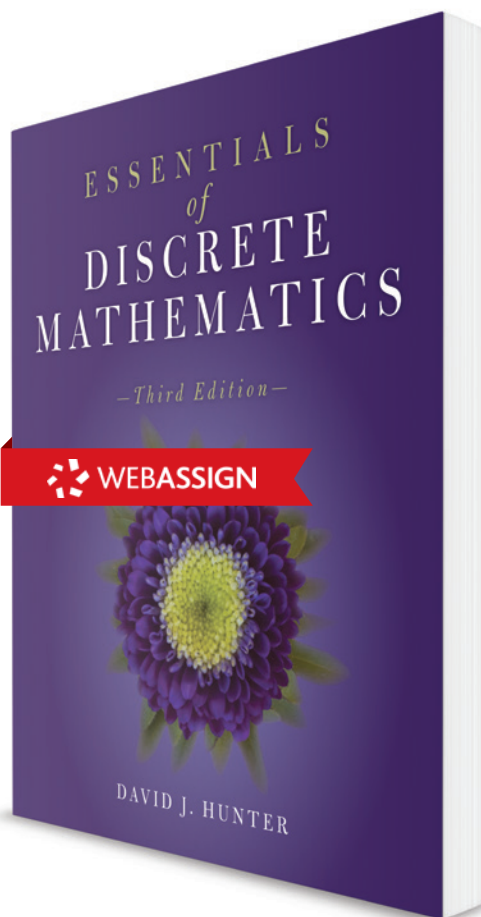


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 Hints, Answers, and Solutions to Selected Exercises

Discrete Structures, Logic, and Computability

FOURTH EDITION

James L. Hein, Portland State University

Updated to align to the latest 2013 ACM/IEEE Computer Science curricula, *Discrete Structures, Logic, and Computability, Fourth Edition* is designed for the one- to two-term discrete mathematics course. The structure of the book supports the spiral method of learning, by first introducing basic information, allowing students to work on the problem, and then revisiting the topic as new information and skills are established. This method, coupled with a student-friendly and simplified writing style, provides an accessible yet comprehensive level of coverage.

Written for prospective computer scientists, computer engineers, or applied mathematicians, who wish to learn about the ideas that underlie computer science, this edition contains an extensive coverage of logic, setting it apart from other books in the field.

- **NEW** – Over 300 new exercises and 125 new examples have been added throughout the text
- **NEW** – Learning objectives and review questions have been added to every section
- **NEW** – Includes a new Chapter 10, *Graph Theory*, expanding the introductory material presented in Chapter 1
- **EXPANDED** – Provides expanded coverage of informal proof, which includes a wider range of proof techniques and examples
- **EXPANDED** – Provides expanded coverage of discrete probability including conditional independence and elementary statistics
- **NEW** – Includes access to the **Navigate Student Companion Website**, featuring a Student Study Guide and a Lab Book of experiments that use a free, open-source mathematics software system

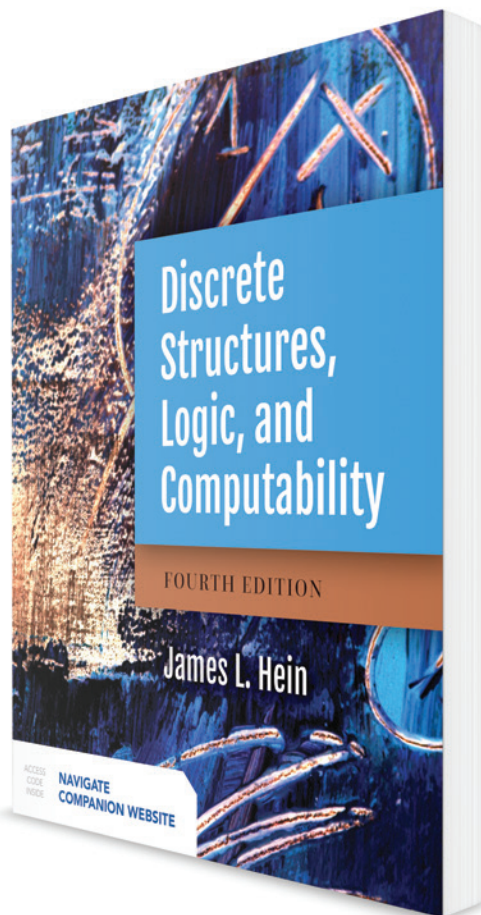


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- Chapter 10 Graph Theory
- Chapter 11 Languages and Automata
- Chapter 12 Computational Notions

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⊕ **Student Resources:** CW, LM, SG

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Complex Analysis

A First Course with Applications

THIRD EDITION

Dennis G. Zill, Loyola Marymount University
Patrick D. Shanahan, Loyola Marymount University

Complex Analysis: A First Course with Applications, Third Edition is a truly accessible introduction to the fundamental principles and applications of complex analysis. Designed for the undergraduate student with a calculus background but no prior experience with complex analysis, this text discusses the theory of the most relevant mathematical topics in a student-friendly manner. With a clear and straightforward writing style, concepts are introduced through numerous examples, illustrations, and applications. Each section of the text contains an extensive exercise set containing a range of computational, conceptual, and geometric problems. In the text and exercises, students are guided and supported through numerous proofs, providing them with a higher level of mathematical insight and maturity. Each chapter contains a separate section devoted exclusively to the application of complex analysis to science and engineering, providing students with the opportunity to develop a practical and clear understanding of complex analysis.

KEY FEATURES

- Clarity of exposition supported by numerous examples
- Extensive exercise sets with a mix of computational and conceptual problems
- Applications to science and engineering throughout the text
- New and revised problems and exercise sets throughout
- Available with **WebAssign**

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+ **Instructor Resources:** ISM, WA

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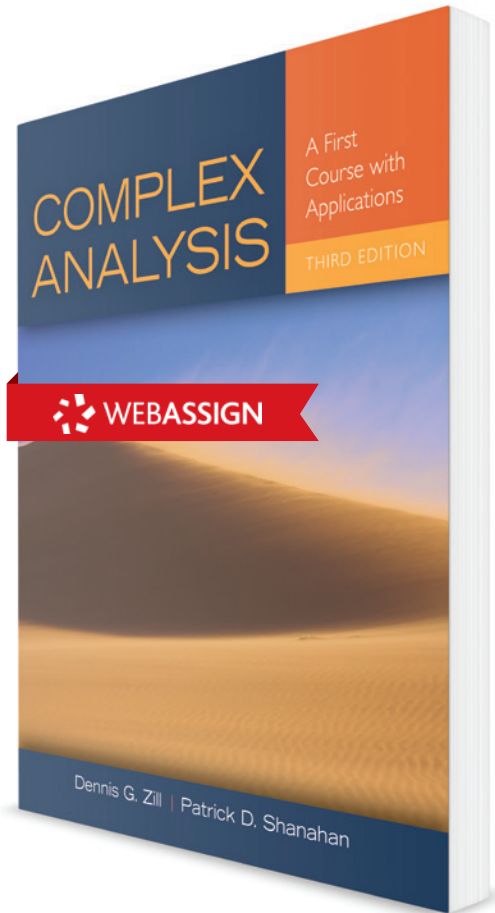


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- Chapter 1 Complex Numbers and the Complex Plane
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- Chapter 5 Integration in the Complex Plane
- Chapter 6 Series and Residues
- Chapter 7 Conformal Mapping

Linear Algebra with Applications

NINTH EDITION

Gareth Williams, Stetson University

Linear Algebra with Applications, Ninth Edition is designed for the introductory course in linear algebra for students within engineering, mathematics, business management, and physics. Updated to increase clarity and improve student learning, the author provides a flexible blend of theory and engaging applications.

The applications found throughout the text range from theoretical applications such as the use of linear algebra in differential equations, to many practical applications in the fields of electrical engineering, traffic analysis, relativity, history, and more.

KEY FEATURES OF THE NINTH EDITION

- Updated to simplify earlier material in the text while later going into advanced material in more depth
- Interesting applications, both theoretical and practical, engage and challenge students
- Carefully explained and illustrated examples highlight key concepts through the text
- A MATLAB manual, included as an appendix, consists of 31 sections that tie into course material
- Available with WebAssign Online Homework and Assessment with integrated eBook and over 500 newly coded questions

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Part 1 Linear Equations, Vectors, and Matrices

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- Chapter 3 Determinants and Eigenvectors

Part 2 Vector Spaces

- Chapter 4 General Vector Spaces
- Chapter 5 Coordinate Representations
- Chapter 6 Inner Product Spaces

Part 3 Numerical Linear Algebra

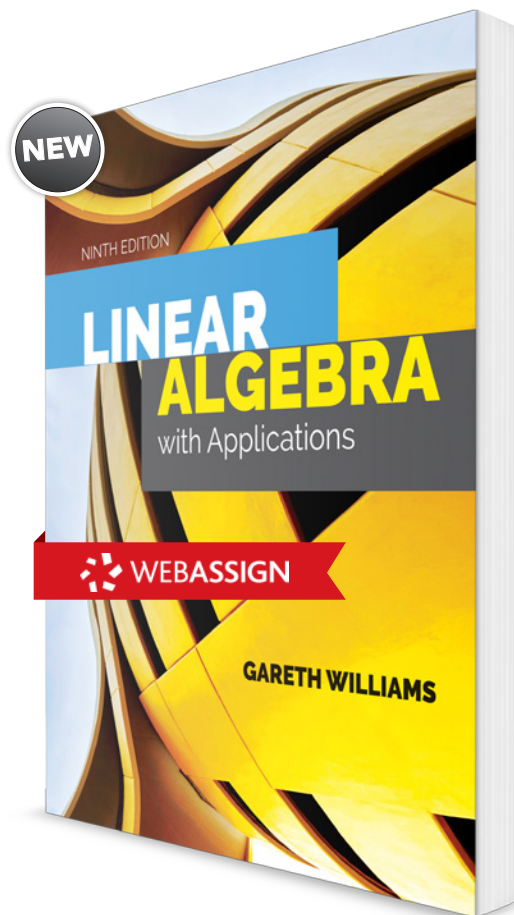
- Chapter 7 Numerical Methods
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- Appendix A Cross Product
- Appendix B Equations of Planes and Lines in Three-Space
- Appendix C Graphing Calculator Manual
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Exploring Mathematics

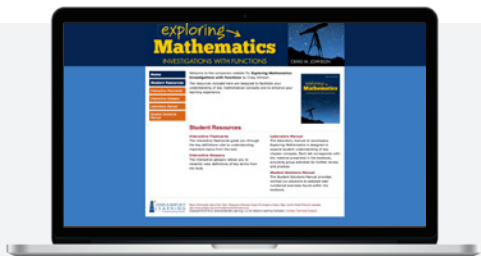
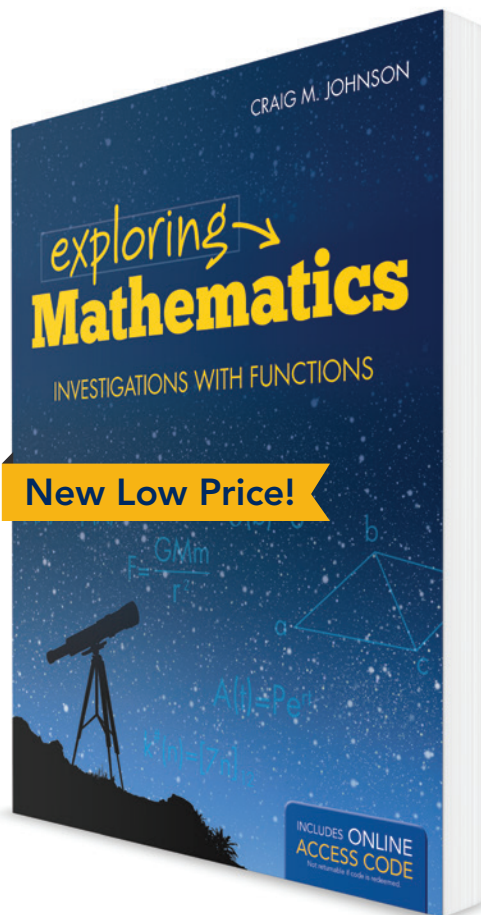
Investigations with Functions

Craig Johnson, Marywood University

Exploring Mathematics is designed for one- or two-term mathematics courses for humanities and liberal arts majors. This unique 10-chapter text draws on examples from the humanities, including how math is used in music and astronomy. It features perforated pages for easy study and review. The student-friendly writing style demystifies the subject matter and offers an engaging and informative overview that will pique students' curiosity and desire to explore mathematics further.

KEY FEATURES

- An interactive design urges students to graph solutions, check off chapter objectives, and answer questions directly in the text
- Utilizes the concept of a function as central theme, providing a common thread through chapters
- Incorporates real-world, multi-disciplinary applications and data



Navigate Companion Website

Included with every new print copy of *Exploring Mathematics*, this website provides a wealth of study aids and learning tools, including a Lab Manual, Interactive Flashcards, Interactive Glossary, and Student Solutions Manual.

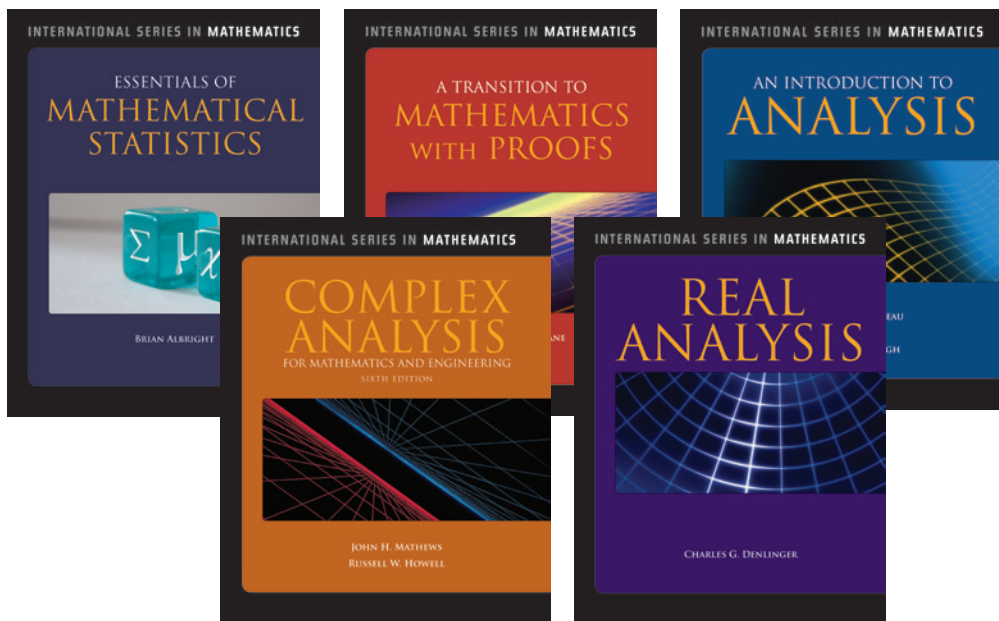
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Complex Analysis for Mathematics and Engineering

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John H. Mathews, California State University
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