Preface

This seventh edition of *Precalculus* maintains our objective of providing a textbook designed for use *by the student*. The book is written in a supportive style and includes abundant pedagogic tools to encourage the student to read the text with care, follow the numerous examples, and tackle the exercises. The skills and confidence the student acquires will enable him or her to succeed in more advanced mathematics courses (calculus in particular) that are required in the study of engineering, the natural sciences, business, and management.

New to This Edition

This edition introduces new and updated exercises, as well as attention-grabbing chapter openings and projects, which will help instructors and students make connections between algebra and the real world. This edition has gone through extensive copy editing and proofing in an effort to further ensure the accuracy of this textbook. This edition supports the use of graphing calculators as powerful problem-solving and visualization tools, without sacrificing the emphasis of the authors on traditional approaches.

Pedagogic Tools

- Concepts are introduced gradually and supported by fully worked examples, figures, and realistic applications to help students build problem-solving skills.
- Many algebraic procedures are described with the aid of a "split screen" that displays, side by side, both the steps of an algorithm and a worked-out example.
- A *Progress Check* following many worked-out examples provides an exercise with its answer, enabling the student to test his or her understanding of the presented material.
- *Warnings* reinforce good mathematical habits by pointing out incorrect practices most commonly found in homework and exams.
- Numerous vignettes have been included throughout the book. These are independent of the text, yet related to the mathematical concepts discussed nearby. They are intended to provide additional interesting material for the student and instructor.
- To help students check their understanding of the concepts, each chapter concludes with a list of terms and symbols and a list of key ideas for review.
- In addition, the *Chapter Review Exercises* and *Review Tests* give students a chance to practice what they have learned. The *Cumulative Review Exercises* at the end of every third chapter provide additional review practice.

Exercises

Abundant exercises provide practice in the mechanical and conceptual aspects of algebra. Exercises requiring the use of a graphing calculator are indicated by the calculator icon shown to the left. Although some exercises require student skills in graphing as well as graphing calculators, the latter may be disregarded, if desired. Answers to selected odd-numbered exercises, *Review Exercises*, *Review Tests*, and *Cumulative Exercises* appear in an appendix at the back of the book, and fully worked solutions are available in the *Student Solutions Manual*. The solved *Review Exercises* reassure students that they have mastered the concepts in preparation for the *Review Tests*.

Supplements and Resources

Instructor Supplements

A complete teaching package is available for instructors who adopt this book. This package includes an **online lab**, **instructor's resource manual with test bank**, **instructor's solutions manual**, **LMS Integration**, and **LMS exam bank files**.

Online Lab	BVT's online lab is available for this textbook on two different platforms—BVT*Lab* (at www.BVTLab.com), and LAB BOOK™ (at www.BVTLabBook.com). These are described in more detail in the corresponding sections below. Both platforms allow instructors to set up graded homework, quizzes and exams.
Instructor's Resource Manual with Test Bank	This resource helps first-time instructors develop the course, while also offering seasoned instructors a new perspective on the materials. Each section of the Instructor's Manual coincides with a chapter in the textbook. The user-friendly format begins with lecture outlines and includes section-by-section test questions. The test questions consist of multiple choice questions, open-ended questions, and word problems. Each chapter has additional practice exercises and practice tests. Answers to all the problem sets, test questions, practice exercises, and practice tests are provided at the back of the manual.
Instructor's Solutions Manual	This resource contains complete solutions to every exercise in the textbook, including *Progress Checks*, *Review Tests,* and *Cumulative Review Exercises*.
LMS Integration	BVT offers basic integration with Learning Management Systems (LMSs), providing single-sign-on links (often called LTI links) from Blackboard, Canvas, Moodle (or any other LMS) directly into BVT*Lab*, eBook^{Plus} or the LAB BOOK platform. Gradebooks from BVT*Lab* and the LAB BOOK can be imported into most LMSs.
LMS Exam Bank Files	Exam banks are available as Blackboard files, QTI files (for Canvas) and Respondus files (for other LMSs) so they can easily be imported into a wide variety of course management systems.

Student Resources

Student resources are available for this textbook on the BVT LAB BOOK and BVT*Lab* platforms, as described below. These resources are geared toward students needing additional assistance, as well as those seeking complete mastery of the content. The following resources are available:

Practice Questions	Students can work through hundreds of practice questions online. Questions are multiple choice or true/false in format, and are graded instantly for immediate feedback.
Student Solutions Manual	The SSM includes complete solutions to the odd-numbered exercises, and to every exercise in the *Chapter Reviews*, *Progress Checks*, and *Cumulative Review Exercises*. In addition, each chapter of this manual ends with review exercises and a review test.
Instructional Videos	These videos offer students expanded instruction and narrated examples of key concepts discussed in the text. These tutorials demonstrate how to interpret the questions and provide step-by-step instructions to help students master the concepts discussed.
Graphing Calculator Supplement	This resource provides basic and advanced instructions demonstrating how to use a graphing calculator effectively. Each *Power User's Corner* vignette illustrates the special features of the graphing calculator as applied to more advanced calculations. Many examples are included to reinforce concepts and allow for practice.
Additional LAB BOOK Resources	On the LAB BOOK platform, comprehension questions are sprinkled throughout each chapter of the eBook, in addition to the step-by-step solution tutorials. Study tools such as text highlighting and margin notes are also available. These resources are not available in BVT*Lab*.

LAB BOOK

LAB BOOK is a web-based eBook platform with an integrated lab providing comprehension tools and interactive student resources. Instructors can build homework and quizzes right into the eBook. LAB BOOK is either included with Textbook^{Plus} (loose-leaf bundle) or offered as a stand-alone product.

Course Setup	LAB BOOK allows instructors to set up their courses and grade books and replicate them from section to section and semester to semester.
Grade Book	Using an assigned passcode, students register into their section's grade book, which automatically grades and records all homework, quizzes, and tests. The gradebook can be exported to any LMS at any time.
Advanced eBook	LAB BOOK is a mobile-friendly, web-based eBook platform designed for PCs, MACs, tablets and smartphones. LAB BOOK allows highlighting, margin notes, and a host of other study tools.
Student Resources	All student resources for this textbook are available in the LAB BOOK, as described in the **Student Resources** section above.
Online Classes	LAB BOOK provides a host of instructor resources and tools to support online and digital learning environments.

Customization

BVT's Custom Publishing Division can help you modify this book's content to satisfy your specific instructional needs. The following are examples of customization:

- Rearrangement of chapters to follow the order of your syllabus
- Deletion of chapters not covered in your course
- Addition of paragraphs, sections, or chapters you or your colleagues have written for this course
- Editing of the existing content, down to the word level
- Customization of the accompanying student resources and online lab
- Addition of handouts, lecture notes, syllabus, and so forth
- Incorporation of student worksheets into the textbook

All of these customizations will be professionally typeset to produce a seamless textbook of the highest quality, with an updated table of contents and index to reflect the customized content.

List of Graphing Calculator Topics

The graphing calculator material in this textbook has been designed to provide a flexible approach to using calculator technology. The *Graphing Calculator Alert* sections instruct students on using a graphing calculator effectively. The *Power User's Corner* sections illustrate the special features of the graphing calculator in more advanced calculations. The lists below show the locations of these two types of boxes and the topics they cover. The *Instructor's Manual* lists the exercises requiring the use of a graphing calculator and those for which it is optional.

Graphing Calculator Alert Topics

Graphing Calculator Power User's Corner Topics