

# Preface

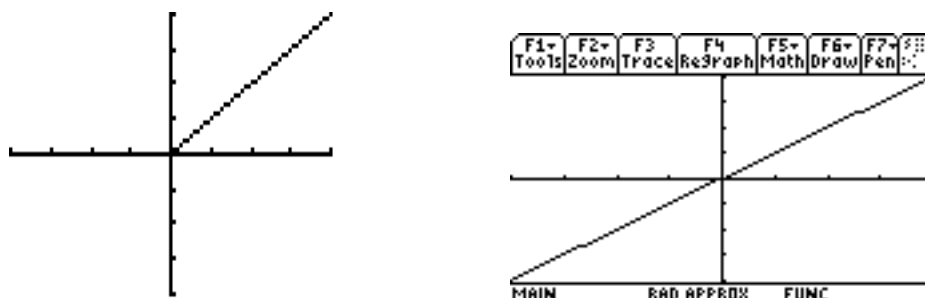
The National Council of Teachers of Mathematics stated in October 2003:

Technology is an essential tool for teaching and learning mathematics effectively; it extends the mathematics that can be taught and enhances students' learning.<sup>1</sup>

With this statement in mind, we will *utilize graphing calculators as tools to assist us in learning the concepts* of College Algebra and Trigonometry. The calculator will not replace the need for doing mathematics with paper and pencil, but as we work on mastering the techniques algebraically, we will use the calculator to help us learn more about the concepts graphically, and thus, enhance and deepen our understanding of those concepts.

It is vital that we understand the mathematics used in order to interpret the results of the calculator correctly. Just learning to push buttons is not understanding. We must know what we are looking for before we push the buttons, and what we expect to see after we push the buttons, so we know if what we are seeing is feasible or not.

For example, when graphing  $y = (\sqrt{x})^2$ , we get the following results on two different calculators. We need to know something about the domain of the function we are graphing so we know whether the calculator is in error or not. Which one of these is correct? Can you explain why one is correct and the other is wrong?



The best way to read this manual is with your calculator in hand. Always work through the directions actually trying the instructions on your own calculator. If you have any difficulty and cannot get it to work after a couple of tries, ask for assistance. The goal is to become familiar enough with the techniques that you can use the calculator proficiently to solve the problems given.

This manual is *not* a duplication of the manual that accompanied your calculator. Neither is it just a set of directions on how to push the appropriate buttons on the calculator. For each calculator function discussed here, directions are given with pictures of what you should see and explanations of what the particular steps are expected to accomplish.

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<sup>1</sup>NCTM Position Statement, October 2003: [www.nctm.org/about/position\\_statements/position\\_statement\\_13.htm](http://www.nctm.org/about/position_statements/position_statement_13.htm)

Chapter 0 is the basic “how to” chapter. Sections from Chapter 0 will be referenced as they are needed in the remaining chapters.

Starting with Chapter 1, the chapters and sections in this manual are numbered to correspond to the chapters and sections in the Stewart, Redlin, Watson text Precalculus 5th edition. When sections from Chapter 0 are needed before working on some of the exercises, the required reading from Chapter 0 is referenced before the exercises begin. Thus, the object is *not* to read Chapter 0 from start to finish, but to **read Chapter 0 sections as they are needed**.

Directions are given on page 187 to show the work required when transferring your information to paper for graded homework. These requirements are guidelines only. They are subject to change by your instructor.

If there is a box around the exercise number, such as 3., a complete answer for that problem can be found in the solutions set, including the appropriate work on paper for graded homework.

The appendices include

- Answers for the odd exercises, usually showing the function definition, viewing window, the calculator graph, and the answer for the problem.
- A set of frequently asked questions (FAQs) of where to find things such as the inequality signs.
- Some common calculator error messages, and their possible causes.

This manual includes specific directions and screen pictures for the TI-83 Plus, TI-86, and TI-89 calculators. However, other TI calculators use the same, or similar, keystrokes, as shown in this table. The calculators are listed in this manual as TI-83, TI-86, and TI-89.

<u>calculator</u>	<u>similar to</u>
TI-82, TI-83, TI-84	TI-83 Plus
TI-85	TI-86
TI-92	TI-89

Section 0.8.2 (Format Function) is not specifically referenced by any section of exercises. You may want to check it out to see what is available, in case it is of interest.

Now you are ready to begin reading in Chapter 1 of this manual on page 187 as you begin Chapter 1 of Stewart’s text.

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