

INTELLIGENT TUTOR™ CONCEPTS AND SKILLS SERIES

INTRODUCTORY CALCULUS

(c) 1988-2016 Intelligent Software, Inc.

Deluxe Recordkeeping Edition - Windows Version

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Installation Instructions

If you are installing from the MathTutor CD-ROM

- (a) Insert the MathTutor CD-ROM into your CD-ROM drive. The MathTutor Installation Launcher menu will appear.
- (b) On the menu, in the section labeled "Step 1 - Select Version", click "Deluxe Versions". Then, in the section labeled "Step 2 - Select Title", click the program you wish to install.
- (c) Click the "Install" button.
- (d) Enter the installation password for the program you have selected, then click OK. NOTE: The installation passwords can be found on the back cover of the CD-ROM sleeve case.
- (e) Follow the instructions on the screen. When the installation is complete you will return to the MathTutor Installation Launcher menu. You may then install another program, or quit.

If you are downloading the program from the MathTutor website

- (a) Visit the download page of our Web site:
<http://www.mathtutor.com/download.html>
- (b) Scroll down to the section titled "Downloads - Deluxe Versions". In the box with the heading "Concepts and Skills Series" click the "Program" link to the right of "Introductory Calculus".
- (c) If a dialog box appears and asks if you wish to "Save" or "Run", select "Save". Be sure to note where the installation file is saved.
- (d) Double click the installation file you just downloaded. The installation process will begin. Follow the instructions on the screen.

System Requirements

* Windows XP, Windows Vista, Windows 7/8, Windows 10

Starting a MathTutor Program

1. Click the **Start** button on the Windows taskbar. The Start menu opens.
2. Choose **Programs**. The Programs folder opens.
3. Choose **Intelligent Tutor**.
4. Click the program you wish to run. The program will then begin, and the title screen will appear. Click the title screen to continue.
5. The **Student Login** screen will appear. To keep records for this session, select a name and click **Login**. If you prefer to not keep records for this session, click **Skip Login**.
6. Use the main menu to select a lesson you would like to study, then click "Start Lesson".

Each of the lessons in these programs contains four sections. The **Concept** section allows you to learn the main concepts of the lesson. The **Examples** section shows examples. The **Practice** section allows you to practice problem solving. And the **Test** section allows you to take a lesson test. A navigation bar to the right of the lesson window allows you to move between these four sections.

Welcome to Introductory Calculus

Welcome to INTRODUCTORY CALCULUS in the INTELLIGENT TUTOR™ Concepts and Skills Series!

INTRODUCTORY CALCULUS is a complete and self-contained course designed especially for students and others engaged in self-study. It will allow you to work at your own pace, using easy to follow tutorials and problem solving exercises.

INTRODUCTORY CALCULUS was designed by math educators, and is comprehensive yet simple to use. It covers all the topics normally taught in a one-year course in introductory calculus. Our goal is to build your math skills and make you more confident about using math in your everyday life, both inside and outside the classroom.

The lessons in INTRODUCTORY CALCULUS will provide you with a dynamic and unique learning experience. Graphics and animation are used throughout the lessons to present the ideas of math clearly and concretely.

Although the lessons are designed to be worked in order, you can study them in any order you wish. Easy to use menus allow you to go directly to any of the lessons in the program.

After working with INTRODUCTORY CALCULUS in our Concepts and Skills Series, you might be interested in INTRODUCTORY CALCULUS in the Practice and Review Series. It contains a wide variety of drill and practice exercises, and sample tests that will give you a profile of your overall skill level in calculus.

The Recordkeeping System

This program's recordkeeping system gives teachers a powerful tool for monitoring each student's use of the program. Before it can be used, the teacher must create a student list of one or more names. The instructions for doing this, and for using the other features of the recordkeeping system, are found starting on page 11.

Topics Covered

PREREQUISITES FOR CALCULUS

Review of Powers and Exponents
Evaluating Functions
The Coordinate System
The Slope of a Line

INTRODUCTION TO DIFFERENTIAL CALCULUS

The Derivative
Derivative of Monomials
Derivative of Sum of Monomials
Product Rule
Quotient Rule

MORE DIFFERENTIAL CALCULUS

The Chain Rule
Higher Order Differentiation
Implicit Differentiation
Min/Max of Quadratic Functions
Min/Max Word Problems

INTRODUCING INTEGRAL CALCULUS

The Integral
Integration of Monomials I
Integration of Monomials II
Integration of Sum of Monomials
Integration of du/u

MORE INTEGRAL CALCULUS

Area Under a Curve
Integration by Parts

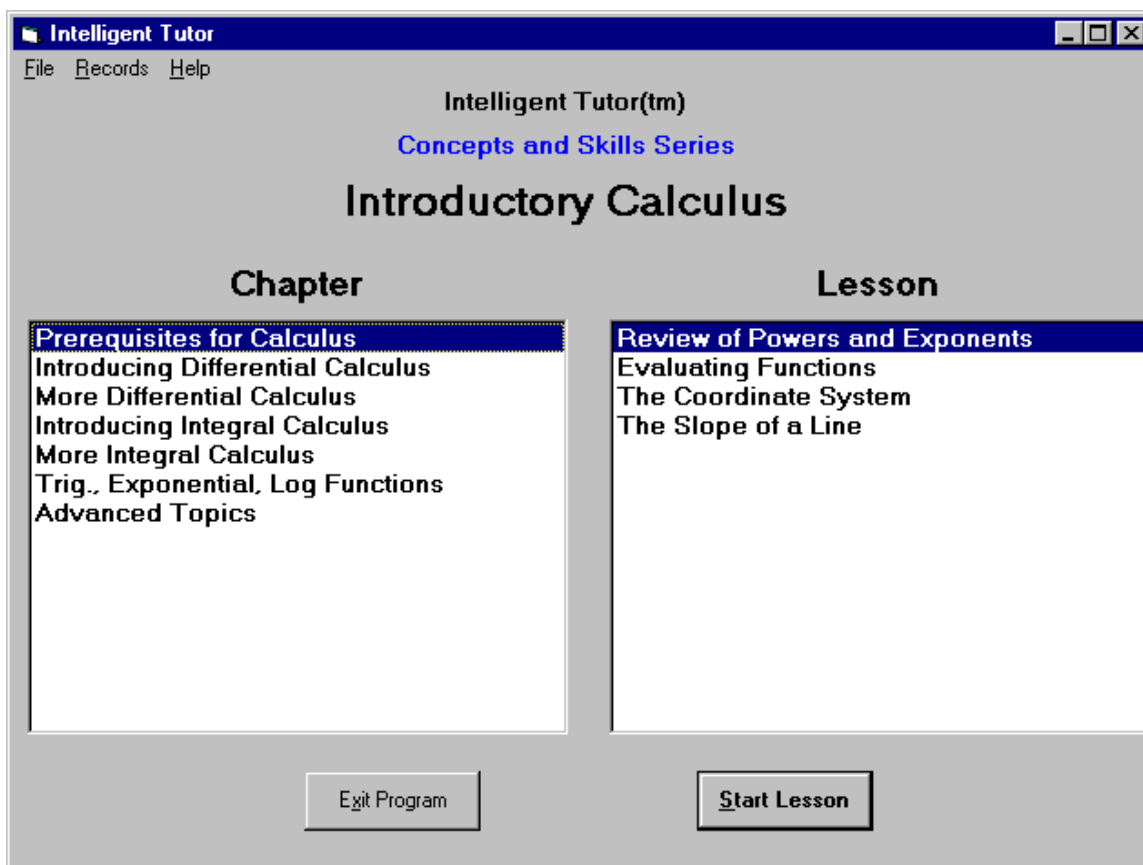
TRIG, EXPONENTIAL, AND LOG FUNCTIONS

Derivative of Trig Functions: Proofs
Derivative of Trig Functions:
Integration of Trig Functions
Differentiation/Integration
of e^u
Derivative of a^{nx}

ADVANCED TOPICS

Solids of Revolution
L'Hospital's Rule
Convergence/Divergence of Series

Using the Program



The program menu (shown above) is the starting point for your study of calculus. The **CHAPTER** window shows the chapters in the course. The **LESSON** window shows the lessons in the current highlighted chapter. To see a list of the lessons in a different chapter, click that chapter in the **CHAPTER** window.

To study a lesson, click the lesson in the **LESSON** window. Then click the **START LESSON** button at the bottom. Your lesson will then begin!

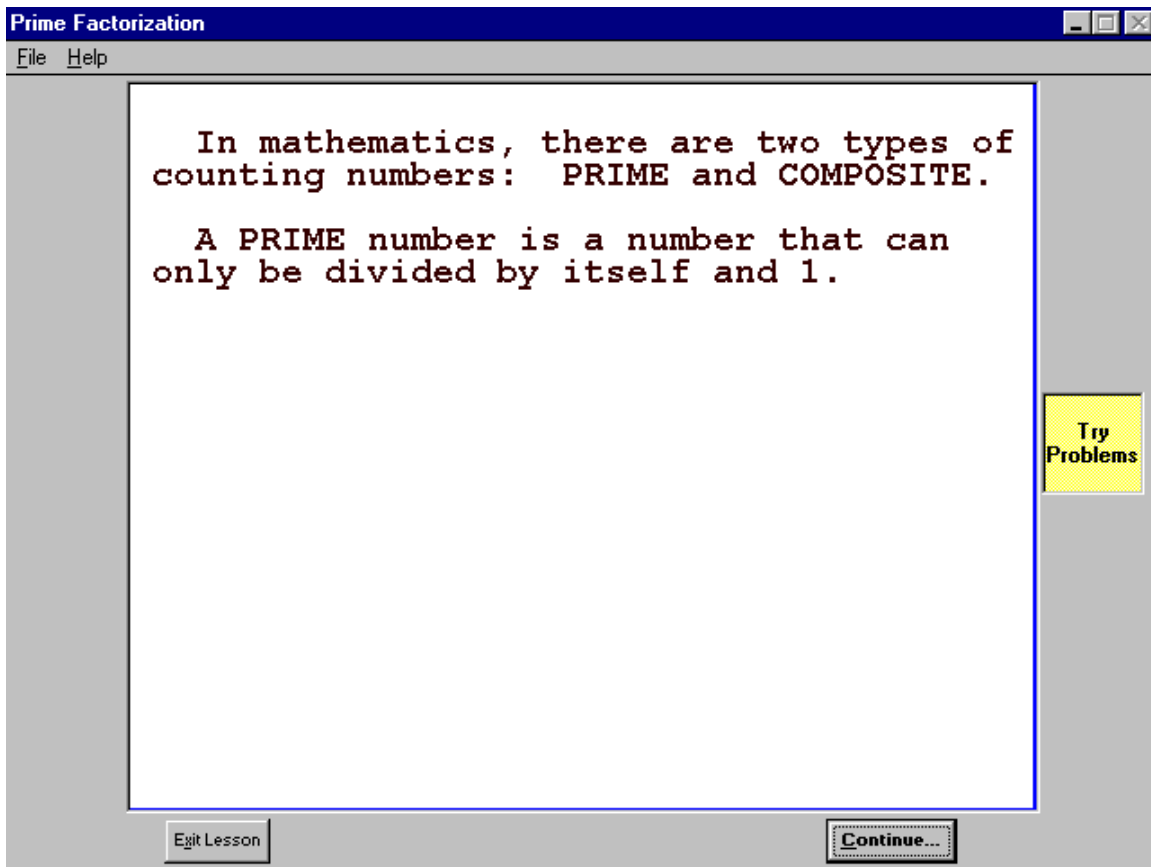
The beginning student is encouraged to work the chapters and lessons in order. But the program gives you the freedom to study the lessons in any sequence you wish.

As you work your way through lessons, and try your hand at solving problems, you may wish to see a summary of how well you are doing in the current session. The **RECORDS** menu allows you to see a summary of your performance in the current session. It is explained later in this manual.

Working a Lesson

After entering a lesson, you can move through the lesson at your own pace by clicking the “**CONTINUE...**” button at the bottom of the window. To return to the program menu click the “**EXIT LESSON**” button at the bottom of the window. To restart the current lesson use the **File** menu and select “**Restart Lesson**”.

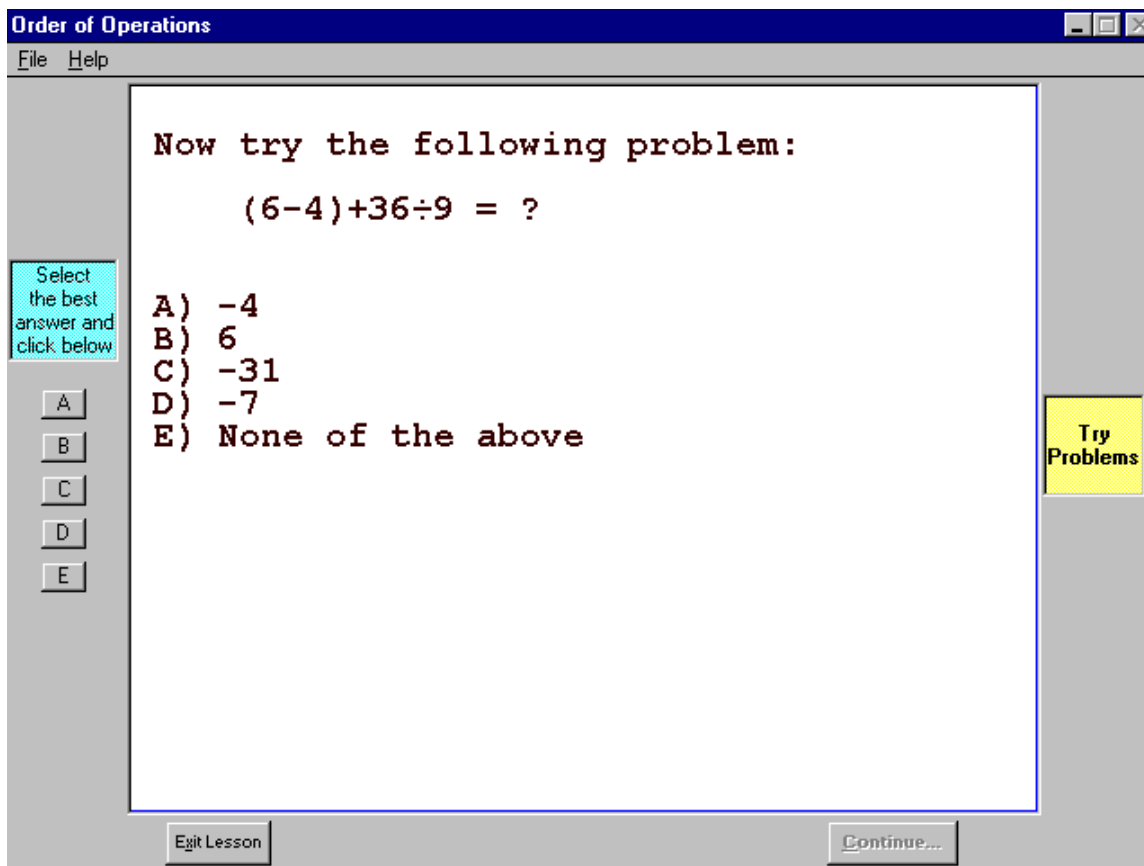
Most lessons have a similar format. First, the main concepts and ideas are presented. Then, one or more examples are presented to illustrate the concepts. After seeing these you will be asked if you would like to see another example. If you click "Yes" you will be shown another example. You will be able to see as many additional examples as you wish. If you click "No" you will be shown a problem to solve.



Here's a tip: When you are in a lesson, if you wish to go straight to solving problems click the “Try Problems” button in the right margin.

Working a Lesson (continued)

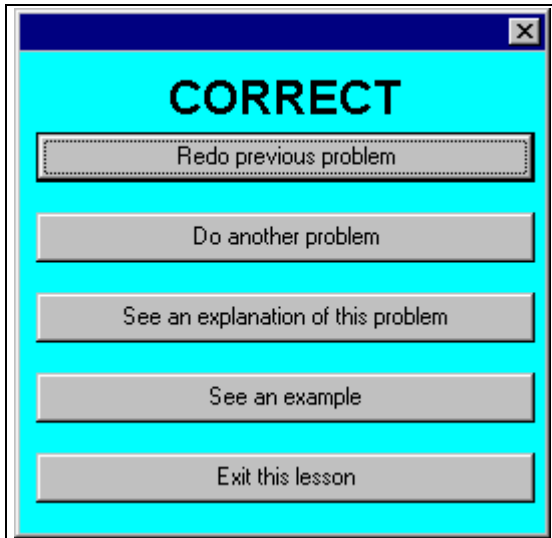
Trying to solve problems is one of the best ways for you to build your math skills, so we encourage you to spend some time on problem solving in each of the lessons you study. After trying a problem you'll have a chance to see the program solve the problem you just tried.



When the program presents a problem for you to solve, the possible answer choices will be displayed in a multiple choice format. To select an answer, click one of the answer choice buttons in the left margin.

The program will respond by telling you if your answer was correct or incorrect. The options available to you at this point are shown below.

Working a Lesson (continued)



After doing a problem, select one of the options shown to the left.

Most of the choices are self-explanatory.

If you did not solve the problem correctly, and would like to see how it can be solved, select the third option choice: **“See an explanation of this problem”**.

Summary of How to Navigate a Lesson

In order to do this, then...

Proceed sequentially through a lesson

Go directly to doing problems

Select an answer to a problem

Restart the current lesson

Return to the program menu

Do This

Click the “Continue...” button

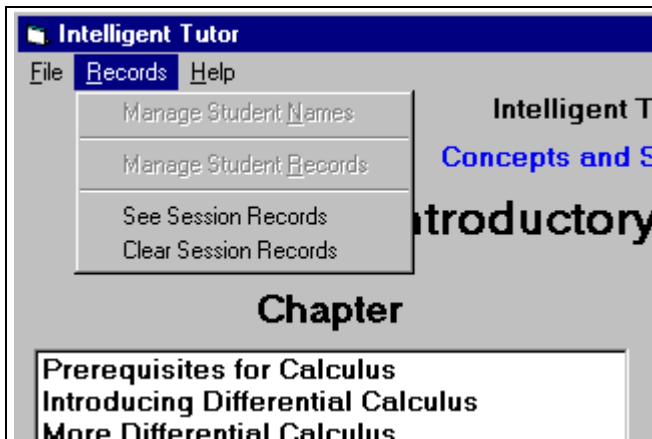
Click the “Try Problems” button in the right margin

Click one of the answer choice buttons (A, B, C, D, E) in the left margin

Choose “Restart Lesson” from the File menu

Click the “Exit Lesson” button, or choose “Return to Menu” from the File Menu

Looking at Your Performance in the Current Session



The **RECORDS** menu allows you to see your performance during the current session.

Select "See Session Records" to see your performance.

Select "Clear Session Records" to erase this sessions records.

The screen below shows how the current session's records are displayed.

The screenshot shows the 'Introductory Calculus' window with a yellow background. At the top, there is a title bar 'Introductory Calculus' and a 'Session Results' title. Below the title is a table with the following data:

Lesson	Number Attempted	Number Correct	Percent Correct
Derivative of Monomials	2	2	100
Integration of Monomials I	2	1	50

At the bottom of the window, there is a button labeled 'Return to Main Menu'.

The Recordkeeping System

Overview

This program's recordkeeping system provides teachers with a complete history of each student's use of the program. Here's how it works. As students use the program, the following information is automatically stored in the **Student Records File**:

- Student Name
- Date
- Name of lesson
- Number of problems attempted
- Number of problems answered correctly
- Number of minutes spent in the lesson

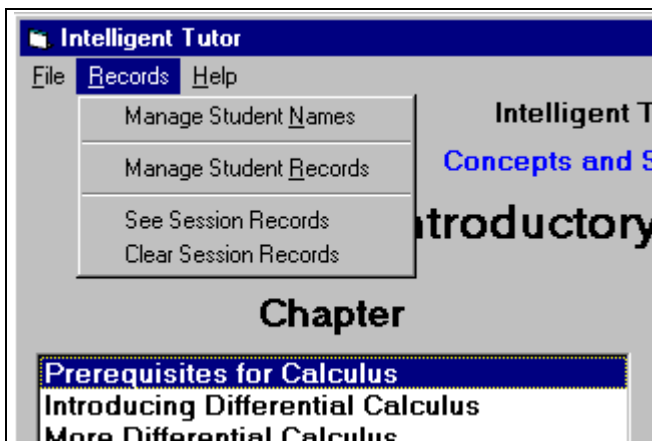
The teacher can use the recordkeeping system at any time to view this information. The teacher will see a list of the lessons each student has studied, the dates on which they used the program, the number of minutes spent in each lesson, and the student's performance in solving problems in each lesson. This information can be viewed for one student, or for all students. The information can be displayed on screen, or on a printed report.

NOTE: This program and its recordkeeping system are not designed for network or site license use. It is designed for use on a single computer. If you wish to use this program on more than one computer you may purchase additional copies of the program at a special reduced priced ("lab disks"), or you may purchase a site license.

The recordkeeping system can handle up to 50 students.

Using the Recordkeeping System

The recordkeeping system is available through the **RECORDS** menu. There are two options: **Manage Student Names** and **Manage Student Records**.



NOTE: Please don't confuse the Recordkeeping System with "Session Records".

"Session Records" show a student how well he or she is doing during the current session, but are not stored after the session has ended.

The Recordkeeping System (continued)

Manage Student Names

In order to maintain student records, you must first create a **Student List** of one or more names. A student list is needed to enable students to select their name from the list and to “log in”.

The **Manage Student Names** screen allows you to add and delete student names, and to edit student names.

To add a student: Click the **Add a Student** button. Then type the name of the student and click **OK**.

To delete a student: Click the student’s name in the Student List. Then click the **Delete a Student** button.

To edit a student name: Click the student’s name in the Student List. Then click the **Edit Student Name** button. Type the new name and click **OK**.

To delete all student names: Click the **Erase All Students** button.

Manage Student Records

The **Manage Student Records** screen allows you to display on the screen, or print, records for an individual student or for all students. You may also erase the records of a single student, or all students.

To display the records for all students: Click the **Display Records for All Students** button.

To print the records for all students: Click the **Print Records for All Students** button.

To erase the records for all students: Click the **Erase Records for All Students** button.

To display the records for a single student: Click the student’s name in the Student List. Then click the **Display Records for Selected Student** button.

The Recordkeeping System (continued)

To print the records for a single student: Click the student's name in the Student List. Then click the **Print Records for Selected Student** button.

To erase the records for a single student: Click the student's name in the Student List. Then click the **Erase Records for Selected Student** button.

The illustration below shows how records are displayed on the screen for a single student.

Notice the sort choices shown at the bottom of the display. They enable you to sort the records by date, by lesson name, or by percent correct.

When you are done viewing the records, click **Done** to return to the **Manage Student Records** screen.

The screenshot shows a window titled "STUDENT RECORDS: Ericson, Randy". Inside the window is a table with the following data:

Name	Date	Lesson	Probs Att.	Probs Corr.	Pct. Corr.	Grd	Mins.
Ericson, Randy	032699	Order of Operations	3	2	67		1
Ericson, Randy	032699	Using Exponents	5	4	80	B	1

At the bottom of the window, there are two control groups:

- Sort By:** Radio buttons for Name, Percent, Date (selected), and Lesson.
- Sort Direction:** Radio buttons for Increasing (selected) and Decreasing.
- A **Done** button.