Scientific Word; TEX à la WYSIWYG

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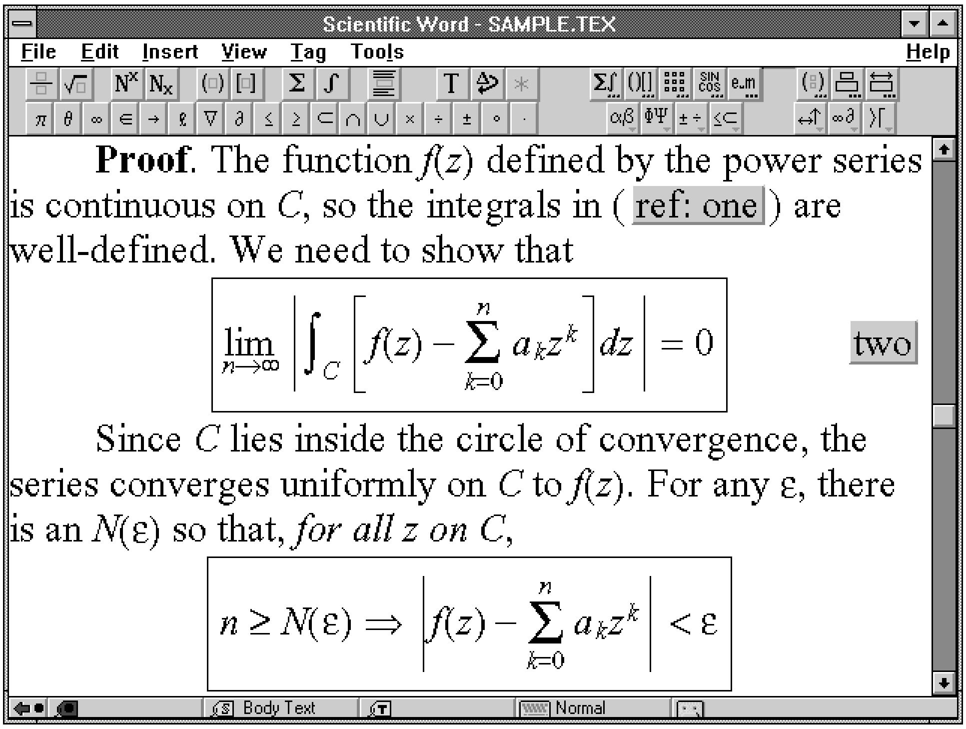
Abstract

A software package for Windows and OS2WIN for inputting mathematical formulas WYSIWYG according to all TEX rules. Internal storage format is a mixture of TEX, LATEX and macros of own design. Mathematical formulas are immediately shown the way they will be printed. Line width for text is limited to the width of the window for ease of use. The built in previewer from TurboTEX shows the whole document layout. There are also dvi drivers included for PostScript, LaserJet, DeskJet and matrixprinters. Pictures can be called just as easy as formulas can be inputted. A description of the philosophy of this pacakge and how to work with it.

1 Introduction

SCIENTIFIC WORD is a Windows front-end to LATEX. It is a full document editor, not just an equation editor. The SCIENTIFIC WORD package includes a complete implementation of TEX for Windows. If you want the outstanding typeset output provided by TEX, but don't want to use the TEX language, SCIENTIFIC WORD is the word processor for you.

In SCIENTIFIC WORD, you interact directly with mathematics in familiar form, not with TEX codes. You can create your document at the computer with no intermediate coding step. Making changes and corrections is equally straightforward.



Scientific Word screen at 2x view

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1.1 Save Time and Increase Your Productivity

SCIENTIFIC WORD will save you time in five essential ways:

1. Time spent entering and correcting TEX codes is "dead time" during which you cannot think about the content of the document itself. By eliminating the coding and by showing mathematics on-screen in familiar form, SCIENTIFIC WORD let's you compose your document directly at the computer.
2. SCIENTIFIC WORD eliminates the need to print or preview a document to check that it is correctly coded. A Windows previewer is provided for you to check the final printed appearance.
3. Some word processors include an equation editor. While they are fine to type an occasional equation, you waste time going back and forth between the body text and equation frames. With SCIENTIFIC WORD, you enter text and mathematics on one continuous screen so you don't waste time popping in and out of equation boxes.
4. By handling all of the spacing, by automatically italicizing mathematics, and by providing intelligent objects like fractions, radicals and matrices, SCIENTIFIC WORD saves you the tedious job of hand formatting which often leads to inconsistent results.
5. Unlike other Windows word processors which focus on the appearance of text, SCIENTIFIC WORD focuses on the meaning or content. If you've ever been through the process of changing the format of an even moderately sized document with a WYSIWYG (What You See Is What You Get) system, you'll appreciate that SCIENTIFIC WORD's revolutionary approach has the potential to save you an extraordinary amount of time. The small initial investment in "unlearning" the habits developed for WYSIWYG systems is handsomely rewarded in a very short time. For more details, see the section entitled **Logical Design**.

1.2 Objects

SCIENTIFIC WORD is object-oriented. That means the program deals with familiar objects you understand, such as fractions, matrices, brackets, and radicals. You'll find these objects have specific properties and that they behave intelligently.

For example, the numerator and denominator of a fraction are automatically centered and the fraction bar expands as you type. Brackets and radicals also expand or contract as you enter an expression. Because the objects themselves are intelligent and adjust themselves as you build a complex expression, it makes your job of entering mathematics that much easier.

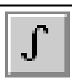
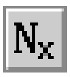
Furthermore, SCIENTIFIC WORD is an intelligent interpreter of what you type. If you are in mathematics and type cos, the software recognizes it as a function and stores and displays it accordingly. And SCIENTIFIC WORD selects the correct typeface, spacing and placement of limits required by functions as you type.

2 Entering Mathematics—An Example

In the following two tables, we describe two ways you can enter the expression $\int_a^b \frac{2}{\sqrt{3-5x^2}}\,dx + 1$ in SCIENTIFIC WORD. The first uses the mouse wherever possible and the second uses the keyboard only. In this example, you will see that you add limits to an operator like $\int$ by applying a subscript and a superscript. An alternative approach taken by other systems is to provide a special icon with the limits already present. This leads to a bewildering array of icons on the screen. The SCIENTIFIC WORD approach uses a much smaller set of icons. Another large reduction in the number of icons comes from the unique feature that the size and position of limits on operators like $\sum$ change automatically from their in-line form $\sum_{n=1}^{\infty}$ to their display form

$$\sum_{n=1}^{\infty}.$$

Here are the steps to enter $\int_a^b \frac{2}{\sqrt{3-5x^2}}\,dx + 1$ using the mouse.

Entering an Integral Using the Mouse	
Action	**Result**
Click 	$\int|$
Click 	$\int_{\square}$