

AMS-TEX: "A Very Friendly Product"

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This is a very brief introduction to AMS-TEX, the specialized version of TEX that is being created by the AMS. It is rather different from most of the other articles in this first newsletter. To read it, you don't have to know anything about TEX, nor do you need to know anything about computers, except how to make a computer file, typing on the keyboard of a terminal. Indeed, the whole point of AMS-TEX is that it will allow you to produce mathematics as beautiful as that in any journal without requiring any knowledge about computers or typesetting.

Suppose, to begin with, that you just want to produce ordinary text. To do this, you basically just have to be able to type. In fact, many of the typist's ordinary petty concerns are irrelevant, since TEX will take care of many details for you. For example, it doesn't matter how long you make each line (TEX will automatically arrange the lines into "justified" text, with all lines the same length), or how many spaces you leave after commas and periods (TEX will use printers' conventions for the spacing after punctuation); you can even leave extra spaces between words (TEX ignores the extra spaces).

You also don't have to worry about how big an indentation to leave at the beginning of a paragraph. In fact, any indentation you leave is irrelevant, since TEX ignores extra spaces; instead, you can tell TEX that a paragraph has ended by leaving a blank line (which you get by pressing the "carriage-return" key twice in a row); TEX then starts a new paragraph with the next text.

Another way you can tell TEX that a paragraph has ended is to type `\par`. The special symbol `\`, which appears on computer terminal keyboards, though not on ordinary typewriters, is used at the beginning of TEX's "control sequences". These, like `\par`, are special instructions to TEX, rather than material to be typeset. For example, `\it` tells TEX to set text in *italics* and `\bf` tells it to set text **boldface**. Control sequences are also used to name symbols that don't appear on the keyboard. For example, `\pi` stands for the symbol π .

This sounds pretty easy, but you may be worrying about other things. How do you know when you get to the end of a page? How do you center the title? How do you put the author's name under it? Etc. Well, the computer file for this article begins

```
\input preprn
\title \amstex: ``A Very Friendly Product``\endtitle
\author Michael D. Spivak \endauthor
```

The first line requested \TeX to print the article in a standard "preprint" style, in which the typeface, the width and length of a page, etc., are all determined. After this, there wasn't much to worry about— \TeX figured out where to start new pages, etc. (If you don't like the typeface or page size, there's an easy way to change that, too. Moreover, you can just as easily request the format of some journal.) The next two lines of input should be nearly self-explanatory. They told \TeX what the title and author's name were— \TeX then set these things correctly by itself (the special control sequence `\amstex` was made to produce the output " $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{T}\mathcal{E}\mathcal{X}$ "). The only slightly surprising feature might be the quotation marks, which were built up from the single quote marks `"` and `'`; this procedure was built into \TeX because most computer terminals don't have left and right double quotes. There are a dozen or so special rules of this sort that you need to learn, but once you have learned them you can produce almost any sort of text, including footnotes and special symbols and diacritical marks (\mathcal{A} , \acute{o} , etc.).

Now how about mathematical text? Well, if you want to get an equation like $y = x + 1$ within text, you simply type `$` signs on either side of it. Then the y and x get set in italics, the spacing around the `=` and `+` signs are just right, etc. (Any spaces that you type in the input for the equation are completely irrelevant, so you can type equations as squashed together or as spread out as you like.) On the other hand, if you want the equation

$$y = x + 1$$

displayed, you just put `$$` on either side of it. Of course, sometimes you need more complicated things, like

$$\begin{aligned} y &= x + 1 \\ &= v + 2. \end{aligned}$$

For this you simply type

```
$$\align y &=x+1\\
&=v+2.\endalign $$
```

The `&` signs tell \TeX which symbols get lined up, and the `\\` separates the lines. In practice, you'd probably type something like `...y&=x+1\\&=v+2...` all on one line; breaking the input into two lines makes it look nicer, but is irrelevant to the way \TeX sets it.

All this may sound too good to be true, and it probably is—the present (incomplete) version of the $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{T}\mathcal{E}\mathcal{X}$ manual runs over 100 pages! The only way to really find out is to get a copy of the $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{T}\mathcal{E}\mathcal{X}$ manual and read it—the first publishable version (somewhat incomplete, but workable) shall be out soon. Since $\mathcal{A}\mathcal{M}\mathcal{S}\text{-}\mathcal{T}\mathcal{E}\mathcal{X}$ is still in the process of being designed, and is meant to make life easier for you (the mathematician and/or technical typist), suggestions for improvements will be welcome.