

Making PDF files for the web

These notes are to accompany 'Putting problem sheets on the Web in PDF format' by Peter Cameron at

<http://www.maths.qmw.ac.uk/~pjc/MAS999/instr.pdf>

They discuss among other things

- Non-L^AT_EX originals
- Font questions
- Macintosh possibilities

These notes will be on the web at

<http://www.maths.qmw.ac.uk/~wilfrid/macinstr.pdf>

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The students on the Student-Staff Liaison Committee (February 2000) were unanimous in asking for lecture materials to be put on the web in PDF format.

If a student (or anyone) with a properly configured web browser calls up a PDF document labelled

.pdf

then the student can immediately

- read on screen
- search
- print out

any or all pages of the document using Acrobat Reader.

Acrobat Reader is free software from

<http://www.adobe.com>

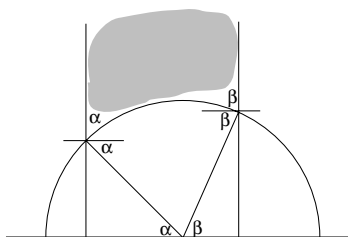
2

Any document that can be printed can be made into a PDF file.

This page was made in L^AT_EX.

Theorem. The area of a hyperbolic triangle with angles $\alpha, \beta, 0$ and two vertical sides is $\pi - \alpha - \beta$.

Proof. Let the third side be a circle segment of radius r :



The area is

$$\begin{aligned} A &= \int_{r \cos(\pi-\alpha)}^{r \cos \beta} \int_{\sqrt{r^2-x^2}}^{\infty} \frac{dy dx}{y^2} \\ &= \int_{r \cos(\pi-\alpha)}^{r \cos \beta} \frac{1}{\sqrt{r^2-x^2}} dx. \end{aligned}$$

Put $x = r \cos \theta$. Then $dx = -r \sin \theta d\theta$ and

$$\begin{aligned} A &= - \int_{\pi-\alpha}^{\beta} \frac{r \sin \theta}{r \sin \theta} d\theta = \int_{\beta}^{\pi-\alpha} d\theta \\ &= \pi - \alpha - \beta. \quad \square \end{aligned}$$

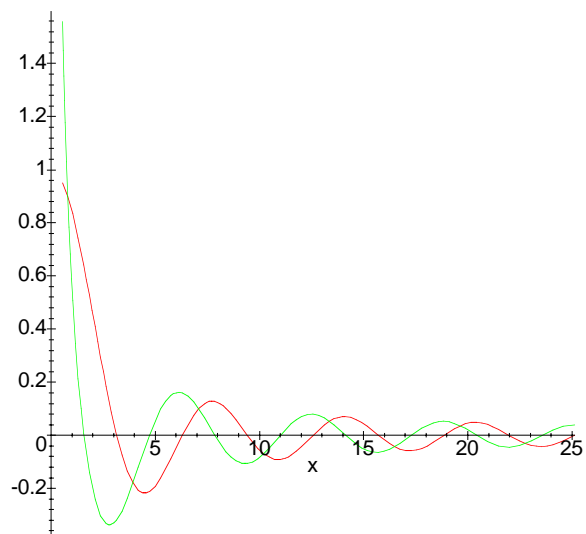
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STUDENT > And this page was written in Maple V.

Syntax error, missing operator or `;`

STUDENT > plot([sin(x)/x, cos(x)/x], x=0..8*Pi, linestyle=[1,5]);



And this was made in Microsoft Word:



Annual Report on Undergraduate and Postgraduate Teaching 1998-99

School/Department	
Programme Directors (or equivalent)	

Teaching provision

Please list the undergraduate and/or postgraduate programmes for which your school or department has responsibility.

Please include those programmes which are collaborations between departments or with another institution, intercollegiate programmes for which the College has overall responsibility, any programmes running for the first time, and any programmes which ran during 1998/99 but have subsequently been withdrawn for 1999/2000.

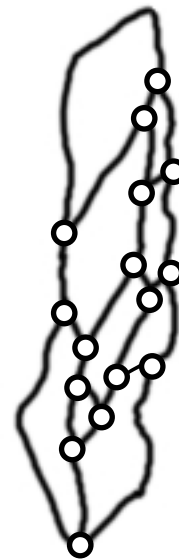
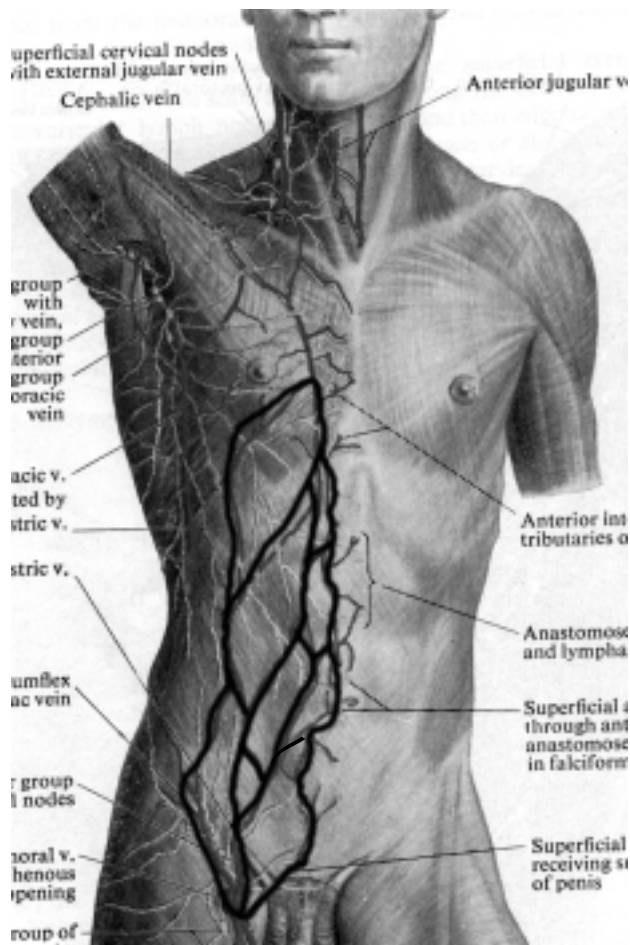
And this was scanned in from manuscript

$$\begin{aligned}
 & \text{(redrawing)} = \text{[Diagram 1]} + \text{[Diagram 2]} \\
 & = \{ \text{[Diagram 3]} + \text{[Diagram 4]} \} \\
 & = \text{[Diagram 5]} + \{ \text{[Diagram 6]} + \text{[Diagram 7]} \} \\
 & = 2 \text{[Diagram 8]} + 12 \\
 & = 2 \text{[Diagram 9]} + 2 \text{[Diagram 10]} + 12 \\
 & = 2 \text{[Diagram 11]} + 2 \{ \text{[Diagram 12]} + \text{[Diagram 13]} \} + 12 \\
 & = 4 \times 4 + 2 \times 4 = 36.
 \end{aligned}$$

$$\begin{aligned}
 & = \{ \text{[Diagram 14]} + \text{[Diagram 15]} \} \\
 & = \{ \text{[Diagram 16]} + \text{[Diagram 17]} \} + \{ \text{[Diagram 18]} + \text{[Diagram 19]} \} \\
 & = \text{[Diagram 20]} + 2 \text{[Diagram 21]} + 11 \\
 & = \text{[Diagram 22]} + 2 \{ \text{[Diagram 23]} + \text{[Diagram 24]} \} + 11 \\
 & = 3 \text{[Diagram 25]} + 2 \times 5 + 11 \\
 & = 3 \{ \text{[Diagram 26]} + \text{[Diagram 27]} \} + 10 + 11 \\
 & = 3(3 + 5) + 10 + 11 = 45
 \end{aligned}$$

So number of spanning trees is $36 + 45 = 81$.

And this was made in Adobe Illustrator:



Making a PDF file (Mac OS)

When you print, your computer sends instructions to your printer in PostScript.

In the Print dialogue window you can instruct the computer to store these instructions in a file instead of sending them to the printer. They are stored in a file with subscript

.ps

Now open Acrobat Distiller, and in Distiller open the .ps file you have created.

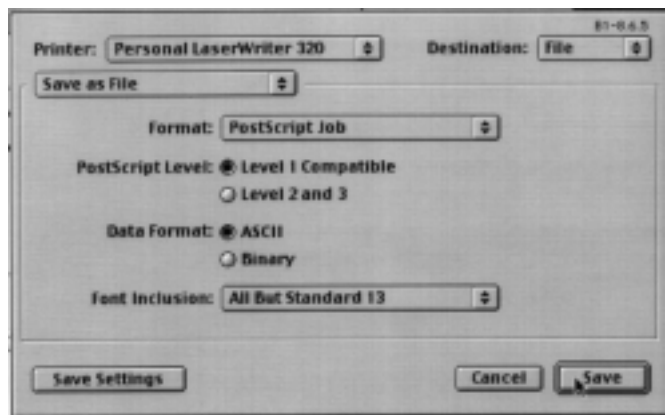
Distiller creates a .pdf file for you with the same name and content as the .ps file.

You can then put this .pdf file into your website as in Peter Cameron's notes.

If you need to ftp the file, set the ftp to Binary.

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Here are the required Print dialogue settings:



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Adobe Acrobat 4 (NOT just Adobe Acrobat Reader) is available from Adobe Systems for a price.

Distiller is a part of it.

See Andrew Tworkowski for details; he is checking the best way for us to get Adobe Acrobat.

There are other ways to make PDF files on a Macintosh.

For example if you install Adobe Acrobat, this also installs PDFWriter.

You can then make PDF directly instead of printing, by going to 'Save as File' in the Print dialogue (as above), and then changing Format to

Acrobat PDF

This method is quicker but less easy to control.

Fine if it works for you!

I used it for the scanned page above.

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Further topics

- Reducing everything to L^AT_EX
- Problems about fonts
- Printing several pages in one
- Other things you can do with Adobe Acrobat

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Reducing everything to L^AT_EX

If you know how to turn L^AT_EX documents into PDF, you can extend to other kinds of document by including them as graphics inside a L^AT_EX page.

In L^AT_EX2e, type in your header

```
\usepackage{graphicx}
```

Turn your other documents into .ps or .eps documents, either by following the instructions for the graphics software you are using, or by 'printing to file' as above.

To include a file `picture.ps` as graphics, type in your L^AT_EX file

```
\includegraphics[bb=20 700 0 0,  
  scale=0.9]{picture.ps}  
\vspace{200pt}
```

You will almost certainly need to fiddle with these numbers to get things in the right place.

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Problems with fonts

There are three problems:

- (a) Making your files smaller
- (b) Avoiding copyright violation
- (c) Getting the symbols to print properly

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(a) Making your files smaller

A .ps file can contain descriptions of the fonts used. This uses up a lot of space.

There are a standard set of 13 fonts installed on every PostScript printer; there is no need to include descriptions of these.

You must include descriptions of all other fonts, e.g. Computer Modern or mathematical fonts. Even if you can read the file on your own machine, other people won't be able to without a description of the font.

You should be able to specify

```
Font inclusion: All but standard  
13
```

in the Print dialogue window when you create the .ps file.

This is strongly recommended.

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(b) Avoiding copyright violation

You shouldn't include in a PDF file a description of a proprietary font in a form that allows other people to decode the font and use it themselves.

There is an easy way to avoid this, and it leads to smaller files.

When you use Distiller, go to Job Options in the Settings menu, then to the Fonts window, and specify

```
Subset All Embedded Fonts Below  
100%
```

This ensures that the .pdf file describes only the symbols that it uses, instead of describing whole fonts.

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(c) Getting the symbols to print properly

The worst problems with .pdf are to do with fonts. Not all .pdf software understands how fonts are coded in different kinds of computer.

Some standard signs that something is wrong are:

- Some symbols printing in the wrong font.
- All symbols printing in the wrong font.
- All commas turning into capital gammas.

The only known solution is to try again with different software or fonts. Adobe Acrobat for Macintosh versions 3 and 4 seem to be on top of the problem.

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Printing several pages in one

If you are putting up transparencies on the web, it might be a kindness to shrink them to four per page; otherwise the print is too large and you waste trees.

It should be possible to arrange this when you make the .ps file using the Print window. Look for a set of options under 'Layout'.

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Other things you can do with Adobe Acrobat

One of the most useful things is that you can splice together two .pdf documents into one.

(This file was made as several files that were then spliced together.)

Also you can delete pages within a .pdf document.

You can sometimes alter text within the .pdf document, but this depends on several things and is not always worth it.

In the other direction, you can lock the text so that nobody can copy the file and then alter it.

You can also add hyperlinks to the text, so that a student reading it on the web can click on a link and get taken automatically to another web page, or to a particular place within the .pdf document being read.

The manual has further information.

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