Figures, References and Citations

Figures

In this lab, we will be producing a lot of figures in Maple, and we'll want to incorporate them into the lab.

I like to save two forms of each plot- One is the encapulated postscript (eps) form, and one is the JPG form. When you use `PDFlatex`, the program looks for the JPG format, but if you were to use just latex, the software looks for the EPS form. In Maple, go ahead and plot something- For example,

```
plot(x^2,x=-3..3);
```

Right click the mouse on the graph, and choose `Export`, then choose either JPG or Encapsulated Postscript.

IMPORTANT POINT: Save your graph in the same folder as your LaTeX file.

Now, in LaTeX, here is the command- In this example, I have my figure saved as: `Lab02Fig01.jpg` and `Lab02Fig01.eps`

```
\begin{figure}[h]
\centering
\includegraphics[width=3.0in]{Lab02Fig01}
\caption{This is a caption for the figure.}
\label{LabelForGraph01}
\end{figure}
```

And the result is Figure 1 (we've actually put two graphs in one figure to show you how to do it). The `h` in the top line tells LaTeX that you'd like the figure "here". Other options are T (for top) and B (for bottom). Please do not try to force where the figure appears- Let LaTeX figure it out automatically. Other notes: In order to reference the figure in your text,
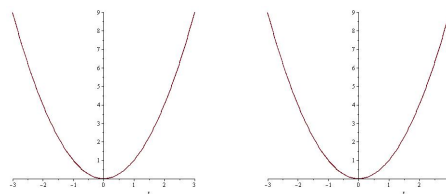

Figure 1: This is a caption for the figure.

we needed to `label` the figure (see the figure command above). In LaTeX, we would type, for example:

```
See Figure \ref{LabelForGraph01}, where we plotted the function...
```

And in your document, you should see (you may have to run LaTeX twice):

See Figure 1, where we plotted the function...

Labels and References

We can label more than figures- We can label equations as well. Here is an example of labeling, then referencing an equation. Note the use of `\begin{equation}` instead of `$$`.

```
\begin{equation}
x=\frac{-b\pm \sqrt{b^2-4ac}}{2a}
\label{QuadForm}
\end{equation}
```

Which produces the quadratic formula, and the equation is numbered:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{1}$$

Now in my text, I can write something like:

```
...   the solutions are shown in Equation \ref{QuadForm}.
```

and the result is:

... the solutions are shown in Equation 1.

You can also put labels on sections, subsections, and items in lists in order to refer back to them (with numbers put in automatically!).

Citations and Bibliography

It is very important to always cite your sources. Here is a very short example citation from the website we linked to from class:

```
This is obvious \cite{norman}.
```

Which results in: This is obvious [3]. If you see a question mark for the citation, run LaTeX again. In place of references in your document, you'll have:

```
\begin{thebibliography}{1}
\bibitem{notes} John W. Dower {\em Readings compiled for History
21.479.}  1991.

\bibitem{impj}  The Japan Reader {\em Imperial Japan 1800-1945} 1973:
Random House, N.Y.

\bibitem{norman} E. H. Norman {\em Japan's emergence as a modern
state} 1940: International Secretariat, Institute of Pacific
Relations.

\end{thebibliography}
```

For students interested in managing a large bibliography, look up the use of "BibTeX". We will typically have 1 or 2 references, so the technique shown here is fine.

References

[1] John W. Dower *Readings compiled for History 21.479.* 1991.

[2] The Japan Reader *Imperial Japan 1800-1945* 1973: Random House, N.Y.

[3] E. H. Norman *Japan's emergence as a modern state* 1940: International Secretariat, Institute of Pacific Relations.