Latex Crashcourse
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For Differential Equations (otherwise known as Math 301 )

Latex is a typesetting system that is well suited to writing mathematics. The basic idea underlying Latex is that aesthetic considerations can be subordinated to logical ones. Thus document formatting is carried out via commands that are compiled by the latex interpreter. The same holds for special symbols: characters such as the Greek letter α are written out and compiled.

The main challenge in learning latex is coming to grips with compiling your document. Commands for particular special symbols can be looked up as need (try http://www.giss.nasa.gov/tools/latex/ltx-2.html) and do not need to be memorized.

1 Sections, et al.
Latex documents can be divided into sections.

1.1 Subsections
And subsections, of course.

1.1.1 Subsubsections
To say nothing of the dreaded subsubsection....

2 Math mode
You can write mathematics inline, e.g. \( y_{n+1} = r y_n (1 - y_n) \), or in display mode, i.e.

\[
y_{n+1} = r y_n (1 - y_n)
\]

You can also give equations numbers

\[
x' = r x (1 - x)
\]

and then refer to these equations by number, i.e. see equation 1

3 Arrays and aligned text
Knowing how to write matrices is a useful skill:

\[
A = \begin{pmatrix}
a_{11} & a_{12} \\
a_{21} & a_{22}
\end{pmatrix}
\]
So is knowing how to align a sequence of equations, either without labels

\begin{align*}
y &= f(x, y) \\
x &= g(x, y)
\end{align*}

or with them:

\begin{align}
y &= f(x, y) \\
x &= g(x, y)
\end{align}

\begin{align}
\tag{2}
y &= f(x, y) \\
x &= g(x, y)
\end{align}

\begin{align}
\tag{3}
y &= f(x, y) \\
x &= g(x, y)
\end{align}

\section{Graphs}

Inserting graphics is a touch tricky. Try using .eps files: