LaTeX Demonstration Document

This document shows you some of the more commonly used sorts of things that LaTeX can do. First of all, it is sometimes convenient to include a bit of mathematics in the narrative. For instance, if we want to tell our reader that $f : \mathbb{R} \to \mathbb{R}$ is a function and is given by $f(x) = x^{3y}$, we can do that by moving in and out of *in-line* math mode. I only recommend in-line math mode for smaller things. As you can see, if we ask LaTeX to typeset $f(x) = \frac{\sin(x)}{1+x^2}$, it will, but it will be hard to read. If we want to force LaTeX to give this expression enough room by spreading the lines apart, we can do it by using the "displaystyle" command, $f(x) = \dfrac{\sin(x)}{1 + x^2}$; it will look pretty weird, though. In general, if you need to include mathematics that takes up more room than an ordinary line will accommodate, you should use displayed mathematics.

With this in mind, also notice how to write set notation.

$$A = \{(x, y) \in \mathbb{R}^2 : x^2 + y^2 = 16\}.$$

Since LaTeX uses the curly brace as a special symbol, in order to get the special symbol, you have to put a $\backslash$ in front of it to cue LaTeX. (Otherwise, it will ignore the curly brace.) The same thing goes for other special symbols, like $.

Left and Right Delimiters:

If you need "larger than usual" left or right parentheses (or other things like braces or brackets) you have to let LaTeX know. For instance, this looks weird:

$$f(x) = (\frac{x}{1 + \exp(x)})^{2x}.$$

But this is much better!

$$f(x) = \left(\frac{x}{1 + \exp(x)} \right)^{2x}.$$

With the

```
\left and \right
```

commands, LaTeX senses how large the delimiters should be and makes the whole thing look good. If you only need one delimiter instead of a pair, you can make LaTeX do it. Look it up or ask Carol.

Final Comments:

- A single carriage return is treated exactly like a space by LaTeX. A double carriage return is a paragraph break. If you really *must* force a carriage return otherwise, you can use a double backslash, but ordinarily, just give LaTeX the logic of your choice and it will typeset it correctly.

- If you want to learn how to include graphics in your document, wait until there is something specific you want to do and then come see me.

Enough for Now!