Title

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1 Section Title

In this paper, we study ...

Definition 1.1. Maybe your paper has some definitions.

1.1 Subsection Title

Theorem 1.1. *Maybe it has a theorem.*

Theorem 1.2. *Maybe it has two.*

Definition 1.2. Maybe it has some more definitions, too.

Example 1.1. Here is how you give an example.

Maybe you need to write things in a list:

- like
- this
- here

Or maybe you need a list with numbers.

1. like
2. that
   (a) you can even
   (b) have lists within lists!

2 Second Section

You can do math mode in the middle of the line, like this $x + y = 5$, or you can do displaymath mode to get a separate line of math, like this

$$x + y = 5.$$

Although it's less preferred by some, you can also write displaymath like this

$$x + y = 5.$$

3 Third Section

Here are some more useful mathmode symbols

- $\mathbb{Z}$, $\mathbb{N}$, $\mathbb{R}$
- x_{n+1}, x^{5+y}
- $\frac{4}{z-2}$, $\dfrac{4}{z-2}$
- $\epsilon, \varepsilon, \delta, \Delta$
- $\in$, $\notin$
- $\subset$, $\subseteq$, $\subsetneq$
- $\neq$, $\leq$, $\geq$
- $\to$, $\rightarrow$, $\leftarrow$

Here are some more... but notice that sometimes things don't look as nice as you want them to... so use displaystyle in math mode:

- $\int_1^\infty x^2\,dx$ vs. $\displaystyle\int_1^\infty x^2\,dx$
- $\sum_{i=1}^\infty e^{i^2}$ vs. $\displaystyle\sum_{i=1}^\infty e^{i^2}$
- $\lim_{n\to\infty} \frac{a_n}{n} = 0$ vs. $\displaystyle\lim_{n\to\infty} \frac{a_n}{n} = 0$

There are lots of other things you can do within Latex! So many! Many of them you can figure out by googling your question and the word latex. Try googling "piecewise function latex" with no quotes.

4 Most useful part of the whole template

The most useful tool for help with latex is the website `http://detexify.kirelabs.org/classify.html`. You can draw symbols and it will tell you the tex code for them. Another useful online reference is `http://en.wikibooks.org/wiki/LaTeX/`.

5 Math 3283W Fall 2013 Writing Project Definition and Functions

This LaTeX file contains the definitions and theorems which are part of your writing project. You can copy and paste from this document, and use it as a starting point to experiment with LaTeX.

Definition 5.1. Let $D \subseteq \mathbb{R}$. A function $f : D \to \mathbb{R}$ is *continuous at* $c \in D$ if for every sequence x_n in D which converges to c, the sequence $f(x_n) \to f(c)$. In symbols, assuming $x_n \in D$ for all n,

$$x_n \to c \Rightarrow f(x_n) \to f(c).$$

If f is continuous at every point in its domain, we simply say f is *continuous.*

Theorem 5.1. *Let f and g be functions for D to $\mathbb{R}$ and let $c \in D$. Suppose that f and g are continuous at c. Then*

- *$f + g$ and fg are continuous at c.*
- *$k \cdot f$ is continuous for any real number k.*
- *$\frac{f}{g}$ is continuou at c if at $g(c) \neq 0$.*

Proof. These claims follow from the Limit Laws in Theorem 4.2.1. For example, ... □

Theorem 5.2. *Let f and g be continuous real-valued functions such that the range of f is contained in the domain of g. Then the composition $g \circ f$ is continuous.*

You can even make things go all the way to the bottom...

In contrast to Google Docs, LaTeX can make just about anything look beautiful and professional. For instance, multi-line equations:

$$\begin{aligned} |x - y| &\leq |x| + |y| \\ &< \frac{\epsilon}{2} + \frac{\epsilon}{2} \\ &= \epsilon \end{aligned}$$

There are no issues with with the double-struck symbol for the set of real numbers, $\mathbb{R}$. Notice that the alignment is kept nice.