The game of Poison:
An introduction to LaTeX

Math 2001

October 2, 2013

1 Introduction

This is where I can just start writing, and the document gets formatted automatically. In fact, it the spacing in the source file does not matter for how the output looks. New paragraphs get started with a double carriage return. For example,

Here is the new paragraph. To do math, we have two options:

(a) For in-line math, or math that happens within text, we surround the math with dollar signs. For example, b as text is different from b as math.

(b) The other option, is to display the math and for this, we use double dollar signs. For example,

$$1 + 2 + \cdots + n = \sum_{i=1}^{n} i = \binom{n}{2}.$$

2 Preliminaries

In a preliminaries section, we might want to define some things. We could emphasize words in the following way. Let $m, n \in \mathbb{Z}$. If $n = km$ for some $k \in \mathbb{Z}$, then we say m is a *divisor* of n.

For basic math, we have exponents are done with carrots, so e^x, and subscripts are done with underscores, so e_x. Note that

$$e^{256} \qquad \text{is different from} \qquad e^2 56.$$

Exponents can be fairly complicated

$$(x+1)^{x^{2x-1}+5}.$$

To do greek letters, we just backslash the names, so α, β, γ, or Γ.

3 Main result

So the main result can be easily stated as a theorem as follows. For $c \in \mathbb{Z}_{\geq 0}$, let

$$D_c = \{d \in \mathbb{Z}_{\geq 0} \mid d \text{ divides } c\}.$$

Theorem 3.1. *Let $a, b \in \mathbb{Z}_{\geq 0}$. Then $a \mid b$ if and only if $D_a \subseteq D_b$.*

Proof. Suppose $a \mid b$. Then $b = ak$ for some $k \in \mathbb{Z}$. Suppose $d \in D_a$. Then

$$a = dm$$

for some $m \in \mathbb{Z}$. Thus,

$$b = ak = dmk,$$

so d divides b and $d \in D_b$. Thus, $D_a \subseteq D_b$.

Suppose $D_a \subseteq D_b$. Note that $a \in D_a$. Since $D_a \subseteq D_b$, we have $a \in D_b$. Thus, a divides b. □

BLAH, we're writing something else, and I'd like to refer to Theorem 3.1. We can also do a similar thing for equations. For example,

$$1 + e^{i\pi} = 0. \tag{3.1}$$

By (3.1), we have that BLAH is true.

Citations (references) work similarly. We could refer to [1].

	II	III	IV
a	b	c	d
1	2	3	4

3.1 Miscellaneous

This is a subsection.

This centers this sentence.

Item environments.
We have

1. First item
   (a) First subitem
   (b) Second subitem
2. Second item

- First item
  - First subitem
  - Second subitem
- Second item

First item. First item

Second item. Second item.

For fractions, we use

$$\frac{1}{1 + \frac{1}{1+\frac{1}{n}}}$$

References

[1] Richmond and Richmond. *A discrete introduction to advanced mathematics*