

# MY FIRST LATEX DOCUMENT

FRANZ PEDIT

Just start typing. A new line in the source document does not effect the output. A new line in the source document does not effect the output. A new line in the source document does not effect the output. A new line in the source document does not effect the output. A new line in the source document does not effect the output. A new line in the source document does not effect the output. A new line in the source document does not effect the output. A new line in the source document does not effect the output.

Leaving spaces between words doesn't effect the output. Leaving spaces between words doesn't effect the output. Leaving spaces between words doesn't effect the output. Leaving spaces between words doesn't effect the output. Leaving spaces between words doesn't effect the output. Leaving spaces between words doesn't effect the output.

To make a new paragraph, leave a line blank. To make a new paragraph, leave a line blank. To make a new paragraph, leave a line blank. To make a new paragraph, leave a line blank. To make a new paragraph, leave a line blank. To make a new paragraph, leave a line blank.

Look up google (e.g. "latex boldface", "latex paragraph indentation", "latex paragraph skip" etc) to find out how to do special things.

You can make **bold letters**, or *italics* etc.

If you want to structure your document, use section commands:

## 1. NEW INSIGHTS INTO MY LIFE

Doomed from the beginning. Why?

- (1) Born on a rainy day.
  - rainy day 1.
  - rainy day 2.
- (2) Stuck in the netherlands of suburbia.

For less pedantic people a bulleted list may be better:

- Born on a rainy day.
- Stuck in the netherlands of suburbia.

If you need to further structure the document, use

1.1. **Insight 1.** Wished I had any insights.

1.2. **Insight 2.** Wished I had any insights.

I personally prefer the amsart documentstyle (see first line of this document). Play with LaTeX. Dont forget to latex your latex file, the one with the .tex ending. This

makes a number of files with various endings, but the most important is the .pdf file.

$$\int f(x)dx$$

I personally prefer the amsart documentstyle (see first line of this document).

Play with LaTeX.

Don't forget to "latex" your latex file, the one with the .tex ending. This makes a number of files with various endings, but the most important is the .pdf file.

## 2. WRITING THEOREMS AND PROOFS ETC

Recently I discovered a new theorem:

**Theorem 2.1.** *The even and odd integers have the "same number of elements". More precisely, the map*

$$f: \mathbb{Z}_{\text{even}} \rightarrow \mathbb{Z}_{\text{odd}}: n \mapsto f(n) := n + 1$$

*is a bijection.*

Thinking more about this, I came up with the following

**Conjecture.** *The rational numbers  $\mathbb{Q}$  have the same number of elements than the integers  $\mathbb{Z}$ .*

The proof of Theorem 2.1 is surprisingly easy:

*Proof.* If  $n$  is an even number it has to be of the form  $n = 2k$  for  $k$  some integer. Then

$$f(n) = n + 1 = 2k + 1$$

which is an odd number. □

Thinking about the above it ocured to me that squares of odd numbers are odd. I think this is worth another

**Theorem 2.2** (Pedit's Theorem). *Let  $n$  be an odd integer. Then  $n^2$  is also an odd integer.*

To prove this we need to recall the binomial formula

$$(1) \quad (a + b)^2 = a^2 + 2ab + b^2$$

which is an important formula on its own (this explains why I numbered it for later use).

*Proof.* Let  $n$  be odd, i.e.,  $n = 2k + 1$  for  $k \in \mathbb{Z}$ . Then, using (1)

$$n^2 = (2k + 1)^2 = 4k^2 + 4k + 1$$

which is of the form  $l + 1$  with  $l = 4k^2 + 4k$  and thus odd. □

I do have to say that writing in latex inspires me to come up with a lot more theorems and conjectures etc.

Just noticed, to get equation numbers and theorem numbers etc right I need to run latex twice....

## 3. MORE COOL STUFF

Today I came up with this wonderful function

$$(2) \quad E(z) = \sum_{n=0}^{\infty} \frac{z^n}{n!}$$

defined for complex numbers  $z \in \mathbb{C}$ . I noticed that it has the invariance property

$$E\left(z + \frac{\pi i}{2}\right) = iE(z)$$

under shift by  $\frac{\pi i}{2}$ . To prove this I discovered an even more amazing formula, namely

$$(3) \quad E(z+w) = E(z)E(w)$$

which contains as a special case the invariance property. You just have to calculate the value

$$E\left(\frac{\pi i}{2}\right) = i$$

Unfortunately, while writing this and admiring my formula (3) I found a reference [Ped] in which all of those formulas have already been proven....

Oh, and don't forget to latex twice until all the numberings, cross referencing and referencing are resolved.

If you want to include graphics: make sure to have the package "graphicx" in the preamble (see latex source file) and then use the following commands (see latex source file "template1.tex"). You can resize by changing *width*. Right now it is set to 0.8 times columnwidth units. Just play with it. The graphic is named "JustElastic" (it has to be a jpg, jpeg, pdf or png, I think latex converts jpg to png automatically, at least in the apple installation) and this file with that name "JustElastic.png" – or whichever ending it has – needs to be in the same folder than the latex source file "template1.tex".

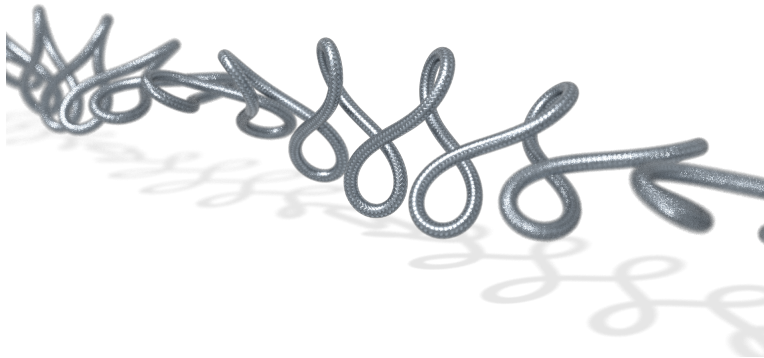


FIGURE 1. An elastic curve in  $\mathbb{R}^3$  with monodromy.

## REFERENCES

[Ped] *Franz Pedit*, Formulas which should surprise you.... Springer-Verlag, Berlin.