

Learning L^AT_EX by doing.

Dig03

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1 General Initial Thoughts

Hello, world!

1.1 Even More Specific Thoughts

Sometimes, I dream about cheese. Test indentation.

Test.

It's really nice cheese.

Wow this is working automatically - quite nice.

1.1.1 Unreasonably Specific Thoughts

I think we've gone too deep.

A Paragraph This is a paragraph.

A Subparagraph This is a subparagraph.

2 Surprise Section

3 Math environment features

3.1 equation

$$f(x) = x^2 \tag{1}$$

3.2 equation*

This environment is provided by the package 'amsmath', and removes automatic numbering.

$$f(x, y) = x^2 + y^2 + c$$

3.3 align*

This environment is needed for aligning multiple equations.

$$\begin{array}{l} 1 + 2 = 3 \\ 1 = 3 - 2 \end{array}$$

Here we see that the equations are aligned such that the equalities are lined up. Equations are aligned at the ampersand (&). Equations are separated with linebreaks (\\).

3.4 Fractions and more

$$\begin{aligned}f(x) &= x^2 \\g(x) &= \frac{1}{x} \\F(x) &= \int_b^a \frac{1}{3}x^3\end{aligned}$$

‘int’ here for integrals, and ‘frac’ for fractions.
‘sqrt’ also exists, and can be nested like so:

$$\frac{1}{\sqrt{x}}$$

More complicated expressions naturally become more error prone. Therefore you should take great care in opening and closing the braces ($\{\}$). Much time may be wasted on debugging such errors. The *Lyx* program offers a great formula editor, which can ease this.

3.5 Matrices

$$\begin{array}{cc}1 & 0 \\0 & 1\end{array}$$

Must be defined within a math environment (equation, equation*, align*, inline).

To surround the matrix by brackets we must use special statements. This ensures scaling works properly.

$$\begin{bmatrix}1 & 0 \\0 & 1\end{bmatrix}$$

This also works for parentheses and braces and is not limited to matrices:

$$\left(\frac{1}{\sqrt{x}}\right)$$

4 Math Features (non-environment)

4.1 Inline math

The following is an example of inline math: $f(x) = x^2$.

5 Figures and Images

The following requires the ‘graphicx’ package.

5.1 Figure environment



Figure 1: A boat.

Figure 1 shows a boat.

The ‘float’ can be set on figures. It consists of a couple possible values. h (here), t (top), b (bottom), p ([extra] page), ! (override), H (float package, stricter h!).

5.2 Subfigure environment

Usually you won’t be adding single images, you’ll want multiple to aid comparison. For this, you’ll need a different environment called subfigure, provided by ‘subcaption’.



(a) Coffee.

(b) More coffee.

Figure 2: The same cup of coffee. Two times.



(a) Coffee.

(b) More coffee.

(c) Tasty coffee.



(d) Too much coffee.

Figure 3: The same cup of coffee. Multiple times.