LaTeX-workshop (Exercises)

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1 New Document

1. Begin a LaTeX-document with the text *Hello world!*

2 Tekst

1. Look on the internet for a short explanation of the definition of LaTeX (one sentence), and cite this sentence. Use a `\footnote{}` [1] to refer to your source, and perhaps a `\url{}` (for this you need to include the package 'url').
2. Look up (on the internet) how to insert diacritics, such as in coördinaat, café, curaçaoënaar, etc. Also look at the difference between 'text' and 'text' (take a good look at the quotation marks).
3. Some characters, such as {, already have a use within LaTeX. How do you think these characters are displayed in the PDF? Tip: what do LaTeX-commands normally look like?
4. Try the different enumerations and other things that are explained in the manual yourself, and try, for example, to make a new type of enumeration.
5. Create a few new commands yourself. You can do this by putting `\newcommand{}{}` in the preamble. The first argument is the name of your command (e.g. `\R`), and the second argument is the command that should be executed (e.g. `\mathbb{R}`).

3 Math Environments

1. Recreate the following formulas. Pay special attention to the brackets!

   (a)
   $$a_{1,1} + a_{1,2} + \ldots + a_{1,n} = \sum_{i=1}^{n} a_{1,i}$$

   (b)
   $$1 \in \left\{ x \mid \mathbb{R} \backslash 2^{3^4} \right\}$$

[1] This is a footnote

(c)

$$\lim_{n\to\infty} 2^{-n} = 0$$

(d)

$$\log_2(x \cdot y) \vee \log_4(x \cdot y)$$

(e)

$$\left\{(a,b) \in \mathbb{Z}^2 : b \neq 0\right\} \ni (0,1)$$

(f)

$$\overrightarrow{AB_{\pm}} = \langle a, \pm b\rangle \neq a\mathbf{i} \mp b\mathbf{j}$$

(g) Notice the space between '$\exists$' and 'η'! Hint: use `\stackrel{...}{...}` and `\mathcal`

$$\exists\ \eta : \mathcal{A} \hookrightarrow \mathcal{B}, \zeta : \mathcal{B} \hookrightarrow \mathcal{A}$$

$$\Updownarrow$$

$$\exists\ \beta : \mathcal{A} \xrightarrow{\sim} \mathcal{B}$$

(h) `\underbrace`

$$\forall\ A, B \in V : \underbrace{\neg(A \wedge B)}_{\text{not } A \text{ and } B} \iff \underbrace{(\neg A) \vee (\neg B)}_{\text{not } A \text{ or not } B}$$

(i)

$$f : A \cup B \to \{0,1\} \text{ with } A \cap B = \emptyset \text{ defined by } x \mapsto \begin{cases} 0 & \text{if } x \in A \\ 1 & \text{if } x \in B \end{cases}$$

(j)

$$\binom{k}{n} = \prod_{l=1}^{n} \frac{k-l+1}{l}$$

(k)

$$\Omega \setminus \left[\bigcup_{i\in I}\left(\bigcup_{j\in J} A_{i,j}\right)\right] \subseteq \left(\bigcap_{\substack{i\in I\\ j\in J}} A_{i,j}\right)^c$$

(l) [2]

$$A = \begin{pmatrix} \dot{t} & 0 & 0 & \dots & 0 & 0 \\ 0 & t & 0 & \dots & 0 & 0 \\ 0 & 0 & \dot{t} & \dots & 0 & 0 \\ \vdots & \vdots & \vdots & \ddots & \vdots & \vdots \\ 0 & 0 & 0 & \dots & t & 0 \\ 0 & 0 & 0 & \dots & 0 & \dot{t} \end{pmatrix}\Bigg|_{t=0}$$

[2] Pay attention to the dots!

Figuur 1: DLF-logo

4 Inserting Images

Start this section on a new page. Insert an image at the top of the page, with caption, as seen above. Then place two images precisely here in the middle of a sentence.

(a) Caption 1

(b) Caption 2

5 References

1. Pick your favourite three equations from chapter 3, and create a reference to them, such as 1a.
2. Make sure that each page of your PDF gets one or more footnotes. [3]
3. Create a short bibliography, containing
   - A reference to your favourite calculus book
   - A reference to the university's webpage

[3] Just like this file