Oz∀n∈ℝTEX Documentation

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What is Oz∀n∈ℝTEX?

The eponymous Oz∀n∈ℝTEX is a TEX package of miscellaneous commands, preformatting, and default package inclusions. Rather than append these definitions at the top of all my LATEX files, I decided to factor them out as a package.

This document will serve as documentation, both in the form of examples and rationale, of this package. It also serves as a sort of unit test because, if it compiles, the package probably works.

Contents

0 Preformatting

0.1 Margins

Via the `geometry` package, the default margin size has been changed to 1.5in. For reference, the article document class uses a margin size of 1.875in.

0.2 Title starting height

Using the `titling` package, the starting height of the title has been set back by 7em.

0.3 Hyper-reference styling

Instead of colored boxes, hyper-references use colored text instead:

- Internal link: blue
- File link: magenta
- URL: cyan

1 Base packages

The Oz∀n∈ℝTEX package includes several `\usepackage` declarations. These are packages that I use commonly enough to simply include in every document. These packages are, in order of inclusion, listed below:

Note: Nested bullets denote packages that are included as dependencies of the parent bullet. These are only listed if I use them independently of their parent package.

- `fontenc`: properly renders certain special characters in text-mode.
- `geometry`: used to adjust the document margins.
- `titling`: used to push back the title starting height.
- `hyperref`: adds commands for hyper-referencing, and adds hyper-references to the table of contents.
- `amssymb`: Adds many useful mathematical symbols (e.g. blackboard bold letters ($\mathbb{R}$), arrows ($\curvearrowright$), inequalities ($\ngeq$), etc.).
- `physics`: adds a whole bunch of common functions (i.e. trig, logs, exp, matrix ops) as well as commands for typesetting matrices, derivatives, and vectors. Crucially, can now use **v** (`\vb v`) instead of $\vec{v}$ (`\vec v`) for vectors.
  - `amsmath`: A general math package that adds many misc. features including: equation alignment, matrix environments, fraction variants, extensible arrows, creating operators, and substacks.

2 Textual Commands

2.1 \Ozaner & \Ozanerbf

`\Ozaner{}` $\longrightarrow$ Oz$\forall$n$\in\mathbb{R}$
`\Ozanerbf{}` $\longrightarrow$ **Oz$\forall$n$\in\mathbb{R}$**

The stylized version of my name I use in various places, including this package. The bolded version (i.e. `\Ozanerbf`) is necessary as `\textbf` won't boldface embedded math symbols.

Note: to typeset Oz$\forall$n$\in\mathbb{R}$T$_{\text{E}}$X simply append `\TeX` to the command, i.e. `\Ozaner\TeX{}`.

3 Calculus Commands

3.1 \evalb

`\evalb{f(x)}{a}{b}` $\longrightarrow [f(x)]_a^b$

Intended to denote the result of a definite integral after integration, but before evaluation:

$$\int_0^5 2x \, \mathrm{d}x = \left[x^2\right]_0^5 = 5^2 - 0^2$$

3.2 \diff

`\diff x` $\longrightarrow \mathrm{d}x$

The `\diff` is simply the `\dd` command, from the `physics` package, prepended with a space. It, along with a variable following it, are intended to be used as the differential in an integral:

$$\int x \, \mathrm{d}x = x^2 + C$$

Without the prepended space, i.e. using `\dd`, the differential is too close to the integrand:

$$\int x\mathrm{d}x = x^2 + C$$

4 Set Theory Commands

4.1 \pset

`\pset X` $\longrightarrow \mathcal{P}(X)$

Used to denote the powerset of some set X. For example:

$$\mathcal{P}(\{1,2\}) = \{\varnothing, \{1\}, \{2\}, \{1,2\}\}$$

4.2 \N, \Z, \Q, \R, \C, \H

$\texttt{\textbackslash N} \longrightarrow \mathbb{N}$ $\texttt{\textbackslash R} \longrightarrow \mathbb{R}$
$\texttt{\textbackslash Z} \longrightarrow \mathbb{Z}$ $\texttt{\textbackslash C} \longrightarrow \mathbb{C}$
$\texttt{\textbackslash Q} \longrightarrow \mathbb{Q}$ $\texttt{\textbackslash H} \longrightarrow \mathbb{H}$

These are simply shorthands for the sets of 6 common number systems. Note that the quaternions command (\H) overrides a different, unimportant, command.