1 General Information

The files *math.sty* and *preamble.sty* should provide you a simple yet effective suite of macros for quick writing of mathematical/scientific papers. To properly load them you should include the following in your preamble:

```
\usepackage{preamble}
\usepackage{math}
```

It is important that you maintain the order of the packages, since math.sty uses some packages included in preamble.sty. Other than providing an extensive list of mathematical operators from math, there are some useful commands in preamble.sty too. The one that I myself use quite often is `\col{<color>}{<text>}`. Although xcolor defines `\textcolor`, it can get kind of "clunky" in tables or similar, so i wrote a shorter command.

2 Symbol Index

As you might have noticed, some of the entries in the table above feature either (de) or (en). These typically refer to language-dependent Operators. A classic example is the Curl of a Vector-Field. In English, the operator is either $\nabla \times \mathbf{V}$ or $\boldsymbol{\nabla} \times (\mathbf{V})$.

There also exist some limits which take no arguments, which is listed with (noarg). This was mostly done to provide a simple text command for just the operator.

3 A Word on Tables

Tables in LaTeXcan be quite a pain, especially correct vertical spacing and alignment. To avoid maximum frustration, the package `cellspace` is loaded. It allows to define a minimal distance to the top and the bottom of a row. To enable this functionality in your tables, you need to modify your column-list by adding `S` in front of your column type, e.g. `\begin{tabular}{Sc Sl Sr}`. **Note:** If you have `siunitx` loaded[1] you need to write `Cc` instead.

The standard value for space to top/bottom is 4pt. You can change this by modifying the corresponding commands in preamble.sty:

- `\setlength\cellspacetopline` controls the spacing to the top
- `\setlength\cellspacebottomline` controls the spacing to the bottom

preamble also includes the `longtable` package. This allows for tables to perform pagebreak. A pagebreak can be manually inserted by typing `\pagebreak` in the table-contents. In order for this to work, the longtable-environment mustn't be in a table-environment. So wrap your longtable in a center and put the caption as a row element. See `readme.tex` for an example.

[1] preamble loads this package

4 Augmented Matrices and Row Operations

We now support augmented matrices. I took this beautiful solution from Stefan Kottwitz[2]:

```
\makeatletter
\renewcommand*\env@matrix[1][*\c@MaxMatrixCols c]{%
  \hskip -\arraycolsep
  \let\@ifnextchar\new@ifnextchar
  \array{#1}}
\makeatother
```

I found this solution on StackExchange[3]. This modifies the amsmath-matrix environment, such that you can add a column-specification (like for tables) e.g. [cc|c] and after the second column, a line will be drawn. A simple example:

```
\begin{bmatrix}[cc|c]
  m_{11} & m_{12} & b_1\\
  m_{21} & m_{21} & b_2
\end{bmatrix}
```

Produces:

$$\left[\begin{array}{cc|c} m_{11} & m_{12} & b_1 \\ m_{21} & m_{21} & b_2 \end{array}\right]$$

The good part about Kott's solution is, that you can still call `\begin{bmatrix}` and related without any column-specifications, so the following still works:

```
\begin{bmatrix}
  m_{11} & m_{12} & b_1\\
  m_{21} & m_{21} & b_2
\end{bmatrix}
```

Which produces:

$$\begin{bmatrix} m_{11} & m_{12} & b_1 \\ m_{21} & m_{21} & b_2 \end{bmatrix}$$

For Row operations, I found Jake's[4] solution in this[5] thread. It allows you to draw a squiggly arrow with a specified length, which is passed as an argument to the call `\longleadsto{<length>}`.

5 Authors Note

Since I am currently studying Information and Computer Engineering, I've only written macros for corresponding fields (i.e. electrical engineering). So currently there are no neat macros for Chemistry or advanced Physics, etc. Since this repository is public you can Issue a feature request and given some time, it should be implemented in a corresponding style.

[2] https://tex.stackexchange.com/users/213/stefan-kottwitz[12.3.2021]
[3] https://tex.stackexchange.com/questions/2233/whats-the-best-way-make-an-augmented-coefficient-matrix[12.3.2021]
[4] https://tex.stackexchange.com/users/2552/jake[12.3.2021]
[5] https://tex.stackexchange.com/questions/12678/squiggly-arrows-in-tikz/442036#442036[12.3.2021]