Tartalomjegyzék

Latex mathematical formulas

Formulas

Reproduce the following in latex:

$$\begin{aligned} a_{11}x_1 + a_{12}x_2 + \ldots + a_{1n}x_n &\leq b_1 \\ a_{21}x_1 + a_{22}x_2 + \ldots + a_{2n}x_n &\leq b_2 \\ &\vdots \\ a_{m1}x_1 + a_{m2}x_2 + \ldots + a_{mn}x_n &\leq b_m \end{aligned}$$

where $x_i \geq 0 \, \forall i = 1, 2, \ldots, n$. The form of the objective function:

$$z = c_1x_1 + c_2x_2 + \ldots + c_nx_n \Rightarrow max \text{ or } min$$

The same with vectors and matrices:

$$\begin{aligned} \overrightarrow{x} &\geq 0 \\ A\overrightarrow{x} &\leq \overrightarrow{b} \\ z = \overrightarrow{c}^T\overrightarrow{x} &\Rightarrow max \text{ or } min \end{aligned}$$

Matrices, tables

Try the tabular environment with different aligns! Create a 3x3 matrix with all kinds of brackets. Try to do an nxn matrix as well for example, try to create this formula from wikipedia: matrix.

Reproduce this table (matrix):

	x_1	x_2	$\cdots$	x_n	$\overrightarrow{b}$
u_1	a_{11}	a_{12}	$\cdots$	a_{1n}	b_1
u_2	a_{21}	a_{22}	$\cdots$	a_{2n}	b_2
$\vdots$	$\vdots$	$\vdots$	$\ddots$	$\vdots$	$\vdots$
u_m	a_{m1}	a_{m2}	$\cdots$	a_{mn}	b_m
$-z$	c_1	c_2	$\cdots$	c_n	0

Theorems, definitions

Let's do some theorems. For that append this to the preamble:

```
\newtheorem{mydef}{Definition}
```

- Create a new threorem style environment!
- Try the different styles (remark, theorem, definition)!

Labels, references

Create references to your theorems:

```
\begin{theorem}\label{thm:sample_thm}
Theorem text
\end{theorem}

In Theorem \ref{thm:sample_thm} we...
```

Floating pictures

```
\begin{figure}[p]
    \centering
    \includegraphics[width=0.8\textwidth]{image.png}
    \caption{Awesome Image}
    \label{fig:awesome_image}
\end{figure}
```

Change the placement (h,t,p,b,!,H)!

BibTeX

BibTeX is a package to create nice looking bibliographies. Create a test bibliography using these sites: http://www.bibtex.org/Using/, https://en.wikibooks.org/wiki/LaTeX/Bibliography_Management.