Homework 1

Emmet Allen

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Question 1

The exercises are automatically numbered, starting from one. Packages such as `amsmath` and `hyperref` are included by default.

Paragraphs are not indented, but are instead separated by some vertical space.

As an example: the *standard inner product* on $\mathbb{R}^n$ is defined as

$$\vec{a} \cdot \vec{b} := x_1 y_1 + \cdots + x_n y_n \qquad \text{for } \vec{a}, \vec{b} \in \mathbb{R}^n.$$

Note that `*` can be used instead of `\cdot`, and `\R` instead of `\mathbb{R}`. (For a normal asterisk, use `\ast`.) Of course, there are macros for the natural numbers etc. too. Commands such as `\abs{}` and `\Set{}` can be used to easily create (scaled) delimiters. For example,

$$\left|\frac{1}{1-\lambda h}\right| \le 1 \qquad \text{and} \qquad \left\{ x \in \mathbb{R} \;\middle|\; 1 < \sqrt{x^3+2} < \frac{3}{2} \right\}.$$

The starred version of these commands disables the auto-scaling.

1.1 This is a subsection

a $\longleftarrow b$

Truth Table			
p	q	p$\longrightarrow q$	$\neg p \longrightarrow \neg q$
T	T	T	T
T	F	F	T
F	T	T	F
F	F	T	T

Truth Table				
p	q	r	p $\wedge \neg q$	r $\vee (p \wedge \neg q)$
T	T	T	F	T
T	T	F	F	F
T	F	T	T	T
T	F	F	T	T
F	T	T	F	T
F	T	F	F	F
F	F	T	F	T
F	F	F	F	F

Question 2

Each exercise (except the first) starts on a new page. You can disable this behavior using the starred version of the command.

Question 3 (10 pts)

Optionally, you can specify the number of points for an exercise.

For more information, refer to `https://github.com/gijs-pennings/latex-homework`.

[left=1cm, right=2cm, vmargin=1cm]geometry

https://www.overleaf.com/project/5ff89f67fb4014760d7af44a

27930_{10} :

$2\lfloor 27930$	0	⎫
$2\lfloor 13965$	1	⎪
$2\lfloor 6982$	0	⎪
$2\lfloor 3491$	1	⎪
$2\lfloor 1745$	1	⎪
$2\lfloor 872$	0	⎪
$2\lfloor 436$	0	⎪
$2\lfloor 218$	0	⎬ $= 110110100011010_2$
$2\lfloor 109$	1	⎪
$2\lfloor 54$	0	⎪
$2\lfloor 27$	1	⎪
$2\lfloor 13$	1	⎪
$2\lfloor 6$	0	⎪
$2\lfloor 3$	1	⎪
$2\lfloor 1$	1	⎭

895_{10} :

$16\lfloor 895$	15	⎫
$16\lfloor 55$	7	⎬ $= 37F_{16}$
$16\lfloor 3$	3	⎭

$$\begin{array}{r} {\scriptstyle 1\,1\,1\,1\,0} \\ 07566_8 \\ +\ 4515_8 \\ \hline 14303_8 \end{array}$$

$$\begin{array}{r} 7\,5\,6\,6_{\,8} \\ +\,4\,5\,1\,5_{\,8} \\ \hline 1\,5\,7 \end{array}$$