1 General Commands

`\qed` for:

q.e.d.

2 Asymptotics

Expression	Command	Example
Distribution under Null Hypothesis	`\hnull`	$\overset{H_0}{\sim}$
Convergence in Distribution	`\cdis`	$\xrightarrow{\mathbb{P}-d}$
Convergence in Probability	`\cpr`	$\xrightarrow{\mathbb{P}-p}$
Convergence almost surely	`\cas`	$\xrightarrow{\mathbb{P}-a.s.}$
Convergence in p-Mean (Parameter: p, default 2)	`\clp[]`	$\xrightarrow{\mathcal{L}^2}$

3 Linear Algebra

Expression	Arguments	Command	Example	Default
Identity Matrix	Number of Entries	`\id[]`	$\mathbf{I}_3$	$\mathbf{I}_n$
Vector of Ones	Length of Vector	`\one[]`	$\mathbf{1}_5$	$\mathbf{1}_n$
Basis vector i	i	`\bas[]`	$\mathbf{e}_2$	$\mathbf{e}_i$
Vector or Matrix	Symbol of Vector or Matrix	`\vc{}`	$\mathbf{A}$, $\mathbf{x}$	-
Trace of a Matrix	Symbol of Matrix	`\tr{}`	$\mathrm{tr}\left(\mathbf{A}\right)$	-
Determinant of a Matrix	Symbol of Matrix	`\det{}`	$\det\left(\mathbf{A}\right)$	-
Rank of a Matrix	Symbol of Matrix	`\rk{}`	$\mathrm{rk}\left(\mathbf{A}\right)$	-
Dimension of a Matrix	Symbol of Matrix	`\dim{}`	$\dim\left(\mathbf{A}\right)$	-
Diagonal of a Matrix	Symbol of Matrix	`\diag{}`	$\mathrm{diag}\left(\mathbf{A}\right)$	-
Inner Product / Scalar Product	Two Vectors/Matrices	`\inner{}{}`	$\langle x, y\rangle$	-
p-Norm	Expression, p (optional)	`\norm[]{}`	$\left\|\left\|\mathbf{x}-\mathbf{y}\right\|\right\|_1$	$\left\|\left\|\mathbf{x}-\mathbf{z}\right\|\right\|_2$

4 Analysis

Expression	Command	Example
Differential Operator	`\dif`	d
Probability Differential	`\dpr`	$\mathrm{d}\mathbb{P}$
Lebesgue Differential	`\dl`	$\mathrm{d}\lambda$
Measure Differential	`\dm`	$\mathrm{d}\mu$
Absolute Value	`\abs{}`	$\left\|x^3\right\|$
Arg Min	`\argmin`	$\underset{\vartheta\in\Theta, x\in\mathbb{N}}{\arg\min}$
Arg Max	`\argmax`	$\underset{p}{\arg\max}$

5 Sets and Stochastics

Expression	Command	Example
Natural Numbers	`\N`	$\mathbb{N}$
Whole Numbers	`\Z`	$\mathbb{Z}$
Rational Numbers	`\Q`	$\mathbb{Q}$
Real Numbers	`\R`	$\mathbb{R}$
Borel Sigma Algebra	`\Bor{}`	$\mathcal{B}(\mathbb{R}_+)$
Power Set	`\Pow{}`	$\mathcal{P}(\{1,2,3\})$
Probability Measure	`\Pm{}`	$\mathbb{P}(X = x)$
Expectation	`\E{}`	$\mathbb{E}[X]$
Variance	`\Var{}`	$\mathbb{V}\mathrm{ar}(X)$
Covariance	`\Cov{}{}`	$\mathbb{C}\mathrm{ov}(X, Y)$
Indicator Function	`\ind{}`	$\mathbb{1}(X \leq x)$

6 Environments

Provided are two environments, one for lemmas and one for theorems. They work identical, however they are counted independently. Furthermore, their numbers can be referenced by `\ref{}` if a label has been provided to the specific environment. An optional argument specifies a name for the theorem/lemma: `\begin{theorem}[name]`.

Theorem 1

Let X, Y be independent real-valued random variables. Then $\mathbb{C}\mathrm{ov}(X, Y) = 0$.

Theorem 2 - Correlation

Let X, Y be independent real-valued random variables. Then $\rho = 0$. Proof: Follows from theorem 1, since

$$\rho \quad = \quad \frac{\mathbb{C}\mathrm{ov}(X, Y)}{\sigma_X \sigma_Y}.$$

Lemma 1

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like "Huardest gefburn"? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.