The "shyne" shortcuts package

Documentation for version 6/3/2018

Included packages

- amsmath
- amsthm
- amssymb
- mathrsfs
- graphicx
- textcomp
- enumitem (except with beamer)
- hyperref (except with beamer)

Number sets

Command	Output	Description
`\N`	$\mathbb{N}$	Natural numbers
`\Z`	$\mathbb{Z}$	Integers
`\R`	$\mathbb{R}$	Real numbers
`\Q`	$\mathbb{Q}$	Rational numbers
`\C`	$\mathbb{C}$	Complex numbers
`\P`	$\mathbb{P}$	Positive numbers

Capital greek letters

Command	Output	Description
`\Alpha`	$\mathcal{A}$	Capital Alpha
`\Beta`	$\mathcal{B}$	Capital Beta
`\Epsilon`	$\mathcal{E}$	Capital Epsilon
`\Zeta`	$\mathcal{Z}$	Capital Zeta
`\Rho`	$\mathcal{P}$	Capital Rho
`\Eta`	$\mathcal{H}$	Capital Eta
`\Kappa`	$\mathcal{K}$	Capital Kappa
`\Mu`	$\mathcal{M}$	Capital Mu
`\Nu`	$\mathcal{N}$	Capital Nu
`\Tau`	$\mathcal{T}$	Capital Tau

Size adjusting grouping symbols

Basic command	Examples	Output	Description
`\sag a b c`	`\sag ( {0,1} ]`	$(0,1]$	General form
	`\sag [ {\dfrac 1 2 , \dfrac 3 4} )`	$\left[\frac{1}{2}, \frac{3}{4}\right)$	
`\Brace a`	`\Brace x`	$\{x\}$	Braces
	`\Brace {\dfrac 1 2}`	$\left\{\frac{1}{2}\right\}$	
`\Paren a`	`\Paren x`	(x)	Parentheses
	`\Paren {\dfrac 1 2}`	$\left(\frac{1}{2}\right)$	
`\Brack a`	`\Brack x`	$[x]$	Brackets
	`\Brack {\dfrac 1 2}`	$\left[\frac{1}{2}\right]$	
`\Abs a`	`\Abs x`	$\lvert x\rvert$	Absolute value
	`\Abs {\dfrac 1 2}`	$\left\lvert\frac{1}{2}\right\rvert$	
`\Norm a`	`\Norm {\vec x}`	$\lVert\vec{x}\rVert$	Norm
	`\Norm {\dfrac 1 2}`	$\left\lVert\frac{1}{2}\right\rVert$	
`\Eval a`	`\Eval {\dfrac {x^2} 2}_{x=1}^3`	$\left.\frac{x^2}{2}\right\rvert_{x=1}^{3}$	Evaluate expression
`\Floor a`	`\Floor \pi`	$\lfloor\pi\rfloor$	Floor
`\Ceil a`	`\Ceil {\dfrac 1 2}`	$\left\lceil\frac{1}{2}\right\rceil$	Ceiling

Notation

Basic command	Example	Output	Description
`\f a`	`\f {det} X`	$\det X$	Named function
`\prm a`	`\prm f (x)`	$f'(x)$	Prime
`\prmd a`	`\prmd \theta`	θ''	Double prime
`\prmt a`	`\prmt {\theta_0}`	θ_0'''	Triple prime

Calculus

Basic command	Example	Output	Description
`\derivn a b c`	`\derivn x y 3`	$\frac{d^3x}{dy^3}$	nth degree derivative
`\deriv a b`	`\deriv y x`	$\frac{dy}{dx}$	Derivative
`\dev a`	`\dev y`	$\frac{d}{dy}$	Derivative
`\devn a b`	`\devn y 2`	$\frac{d^2}{dy^2}$	nth degree derivative
`\pderivn a b c`	`\pderivn x y 3`	$\frac{\partial^3 x}{\partial y^3}$	nth degree partial derivative
`\pderiv a b`	`\pderiv y x`	$\frac{\partial y}{\partial x}$	Partial derivative
`\pdev a`	`\pdev y`	$\frac{\partial}{\partial y}$	Partial derivative
`\pdevn a b`	`\pdevn y 2`	$\frac{\partial^2}{\partial y^2}$	nth degree partial derivative
`\dd a`	`\int f(x) \dd x`	$\int f(x)\,dx$	Integral “suffix”

Analysis and set theory

Basic command	Example	Output	Description
`\set a`	`S = \set{x \mid x \le y}`	$S = \{x \mid x \le y\}$	Sets (same as `\Brace`)
`\implies, \iff`	`\implies, \iff`	$\Rightarrow, \Leftrightarrow$	Shorter arrows
`\bd`	`\bd S`	$\operatorname{bd} S$	Boundry
`\cl`	`\cl S`	$\operatorname{cl} S$	Closure
`\interior`	`\interior S`	$\operatorname{int} S$	Interior

Linear algebra

Basic command	Example	Output	Description
`\arr a`	`\arr{1&2\\3&4}`	$\begin{array}{cc} 1 & 2 \\ 3 & 4 \end{array}$	Array (naked matrix)
`\mat a`	`\mat{1&2\\3&4}`	$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$	Matrix with brackets
`\pmat a`	`\pmat{1&2\\3&4}`	$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$	Matrix with parentheses
`\bv a`	`\bv X`	$\boldsymbol{X}$	"Bold vector" notation
`\inv`	`(AB)\inv`	$(AB)^{-1}$	Inverse suffix
`\trn`	`(AB)\trn`	$(AB)^{T}$	Transpose suffix
`\minv a`	`\minv X`	$\boldsymbol{X}^{-1}$	Matrix inverse
`\mtrn a`	`\mtrn X`	$\boldsymbol{X}^{T}$	Matrix transpose

Abstract algebra

Basic command	Example	Output	Description
`\F`	`\F`	$\mathbb{F}$	Field
`\conmod a b c`	`\conmod 1 4 3`	$1 \equiv 4 \pmod 3$	Congruent modulo
`\zmodz a`	`\zmodz 6`	$\mathbb{Z}/6\,\mathbb{Z}$	"Z mod Z"

Statistics

Basic command	Example	Output	Description
`\E`	`\E X^2`	$\mathbb{E}X^2$	Expected value
`\V`	`\V X`	$\mathbb{V}X$	Variance
`\var`	`\var (X+Y)`	$\mathrm{Var}\left(X+Y\right)$	Variance
`\cov`	`\cov (X,Y)`	$\mathrm{Cov}\left(X,Y\right)$	Covariance
`\logit`	`\logit (p)`	$\mathrm{logit}\left(p\right)$	Logit (log odds)

Samples

Basic command	Example	Output	Description
`\samplexab a b c`	`\samplexab y 3 {10}`	$y_3, \ldots, y_{10}$	Sample of **a** from indeices **b** to **c**
`\sample a b`	`\sample X {25}`	$X_1, \ldots, X_{25}$	Sample of **a** from 1 to **b**
`\sam a`	`\sam Y`	$Y_1, \ldots, Y_n$	Sample of **a** from 1 to n
`\samplexabplus a b c`	`\samplexabplus y 3 {10}`	$y_3 + \cdots + y_{10}$	Sample of **a** from indeices **b** to **c** summed
`\sampleplus a b`	`\sampleplus X {25}`	$X_1 + \cdots + X_{25}$	Sample of **a** from 1 to **b** summed
`\samplus a`	`\samplus Y`	$Y_1 + \cdots + Y_n$	Sample of **a** from 1 to n summed

Display

Basic command	Example	Output	Description
`\ds`	`\ds \sum_{i=1}^n i^2`	$\sum_{i=1}^{n} i^2$	Shortcut for `\displaystyle` (Large symbols for inline math mode)

Text

Basic command	Example	Output	Description
`\bt a`	`Not bold, \bt{Bold}`	Not bold, **Bold**	Bold text in text mode
`\btext a`	`$x^2 \btext{ is x-squared}$`	x^2 **is x-squared**	Bold text within math mode
`\txtand`	`x=3 \txtand y=2`	$x = 3$ and $y = 2$	put an 'and' with space between equations
`\txtor`	`x=3 \txtor x \ge 10`	$x = 3$ or $x \geq 10$	put an 'or' with space between equations

Tables

Adjust spacing in tables: `\tabspace a`

- Add medium vertical space in table: `\tabspacemed = \tabspace{1.5}`

```
\tabspacemed
\begin{tabular}{c}
Caption\\
\hline
A\\
B\\
C
\end{tabular}
```

Caption
A
B
C

- Return to default spacing: `\tabspacedef = \tabspace{1}`

```
\tabspacedef
\begin{tabular}{c}
Caption\\
\hline
A\\
B\\
C
\end{tabular}
```

Caption
A
B
C

Equations in Beamer

Using `\begin{equation} \end{equation` or `\[, \]` to display math in the equation environment produces excessive line spacing in Beamer. Use `\eq{}` for centered display style math with minimal spacing. (Should be proceded by paragraph break `\\`.)

```
\eq{\int_a^b x^3 \dd x = \Eval{\frac {x^2}3}_a^b}
```

$$\int_a^b x^3 \, dx = \frac{x^2}{3}\bigg|_a^b$$

List styles

Note: Not available in beamer documents

- Bold lowercase roman numerals in parentheses

```
\begin{enumroman}
\item Item 1
\item Item 2
\item Item 3
\end{enumroman}
```

(*i*) Item 1

(*ii*) Item 2

(*iii*) Item 3

- Bold arabic numerals in parentheses

```
\begin{enumarab}
\item Item 1
\item Item 2
\item Item 3
\end{enumarab}
```

(1) Item 1

(2) Item 2

(3) Item 3

- Bold lowercase letters in parentheses

```
\begin{enumalpha}
\item Item 1
\item Item 2
\item Item 3
\end{enumalpha}
```

(a) Item 1

(b) Item 2

(c) Item 3