Math-Symbols-in-LaTeX-Manual

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Insert `\usepackage{math-symbols}` in your document's preamble.

Contents

1 Constants and Useful Symbols **1**

2 Vector and Matrix Defination **1**
2.1 Vector Notations . . . 1
2.2 Matrix/Tensor Notations . . . 1
2.3 Transposed Matrix Notations . . . 1
2.4 Special Vector and Matrix Notations . . . 1

3 Useful Functions and Operators **2**

4 Useful Aliases and Generators **2**

1 Constants and Useful Symbols

i	`\mi`	$\mathbb{N}$	`\mnatr`	$\mathbb{C}$	`\mcmpx`	$C[a,b]$	`\mscab`	$L^m([a,b])$	`\mslbg[{[a, b]}]{m}`
j	`\mj`	$\mathbb{Z}$	`\mintg`	$\mathbb{H}$	`\mhilb`	$C(I)$	`\mscon{(I)}`	$H^m([a,b])$	`\mssbl[{[a, b]}]{m}`
e	`\me`	$\mathbb{Q}$	`\mrato`	Cond.	`\mcond`	$L^2(I)$	`\mslbg{2}`		
		$\mathbb{R}$	`\mreal`	const	`\mconst`	$H^2(I)$	`\mssbl{2}`		

2 Vector and Matrix Defination

2.1 Vector Notations

$\boldsymbol{a}$	`\mva`	$\boldsymbol{j}$	`\mvj`	$\boldsymbol{s}$	`\mvs`	$\boldsymbol{\alpha}$	`\mvalpha`	$\boldsymbol{\kappa}$	`\mvkappa`	$\boldsymbol{\upsilon}$	`\mvupsilon`
$\boldsymbol{b}$	`\mvb`	$\boldsymbol{k}$	`\mvk`	$\boldsymbol{t}$	`\mvt`	$\boldsymbol{\beta}$	`\mvbeta`	$\boldsymbol{\lambda}$	`\mvlambda`	$\boldsymbol{\phi}$	`\mvphi`
$\boldsymbol{c}$	`\mvc`	$\boldsymbol{l}$	`\mvl`	$\boldsymbol{u}$	`\mvu`	$\boldsymbol{\gamma}$	`\mvgamma`	$\boldsymbol{\mu}$	`\mvmu`	$\boldsymbol{\chi}$	`\mvchi`
$\boldsymbol{d}$	`\mvd`	$\boldsymbol{m}$	`\mvm`	$\boldsymbol{v}$	`\mvv`	$\boldsymbol{\delta}$	`\mvdelta`	$\boldsymbol{\nu}$	`\mvnu`	$\boldsymbol{\psi}$	`\mvpsi`
$\boldsymbol{e}$	`\mve`	$\boldsymbol{n}$	`\mvn`	$\boldsymbol{w}$	`\mvw`	$\boldsymbol{\epsilon}$	`\mvepsilon`	$\boldsymbol{\xi}$	`\mvxi`	$\boldsymbol{\omega}$	`\mvomega`
$\boldsymbol{f}$	`\mvf`	$\boldsymbol{o}$	`\mvo`	$\boldsymbol{x}$	`\mvx`	$\boldsymbol{\zeta}$	`\mvzeta`	$\boldsymbol{\pi}$	`\mvpi`		
$\boldsymbol{g}$	`\mvg`	$\boldsymbol{p}$	`\mvp`	$\boldsymbol{y}$	`\mvy`	$\boldsymbol{\eta}$	`\mveta`	$\boldsymbol{\rho}$	`\mvrho`		
$\boldsymbol{h}$	`\mvh`	$\boldsymbol{q}$	`\mvq`	$\boldsymbol{z}$	`\mvz`	$\boldsymbol{\theta}$	`\mvtheta`	$\boldsymbol{\sigma}$	`\mvsigma`		
$\boldsymbol{i}$	`\mvi`	$\boldsymbol{r}$	`\mvr`			$\boldsymbol{\iota}$	`\mviota`	$\boldsymbol{\tau}$	`\mvtau`		

2.2 Matrix/Tensor Notations

Use `\mm<name>` or `\mt<name>` as the abbr of Matrix/Tensor.

A	`\mma`	**G**	`\mmg`	**M**	`\mmm`	**S**	`\mms`	**Y**	`\mmy`	$\boldsymbol{\Gamma}$	`\mmgamma`	$\boldsymbol{\Sigma}$	`\mmsigma`
B	`\mmb`	**H**	`\mmh`	**N**	`\mmn`	**T**	`\mmt`	**Z**	`\mmz`	$\boldsymbol{\Delta}$	`\mmdelta`	$\boldsymbol{\Upsilon}$	`\mmupsilon`
C	`\mmc`	**I**	`\mmi`	**O**	`\mmo`	**U**	`\mmu`			$\boldsymbol{\Theta}$	`\mmtheta`	$\boldsymbol{\Phi}$	`\mmphi`
D	`\mmd`	**J**	`\mmj`	**P**	`\mmp`	**V**	`\mmv`			$\boldsymbol{\Lambda}$	`\mmlambda`	$\boldsymbol{\Psi}$	`\mmpsi`
E	`\mme`	**K**	`\mmk`	**Q**	`\mmq`	**W**	`\mmw`			$\boldsymbol{\Xi}$	`\mmxi`	$\boldsymbol{\Omega}$	`\mmomega`
F	`\mmf`	**L**	`\mml`	**R**	`\mmr`	**X**	`\mmx`			$\boldsymbol{\Pi}$	`\mmpi`		

2.3 Transposed Matrix Notations

$\mathbf{A}^T$	\mmat	$\mathbf{H}^T$	\mmht	$\mathbf{O}^T$	\mmot	$\mathbf{V}^T$	\mmvt	$\mathbf{\Gamma}^T$	\mmgammat	$\mathbf{\Upsilon}^T$	\mmupsilont
$\mathbf{B}^T$	\mmbt	$\mathbf{I}^T$	\mmit	$\mathbf{P}^T$	\mmpt	$\mathbf{W}^T$	\mmwt	$\mathbf{\Delta}^T$	\mmdeltat	$\mathbf{\Phi}^T$	\mmphit
$\mathbf{C}^T$	\mmct	$\mathbf{J}^T$	\mmjt	$\mathbf{Q}^T$	\mmqt	$\mathbf{X}^T$	\mmxt	$\mathbf{\Theta}^T$	\mmthetat	$\mathbf{\Psi}^T$	\mmpsit
$\mathbf{D}^T$	\mmdt	$\mathbf{K}^T$	\mmkt	$\mathbf{R}^T$	\mmrt	$\mathbf{Y}^T$	\mmyt	$\mathbf{\Lambda}^T$	\mmlambdat	$\mathbf{\Omega}^T$	\mmomegat
$\mathbf{E}^T$	\mmet	$\mathbf{L}^T$	\mmlt	$\mathbf{S}^T$	\mmst	$\mathbf{Z}^T$	\mmzt	$\mathbf{\Xi}^T$	\mmxit		
$\mathbf{F}^T$	\mmft	$\mathbf{M}^T$	\mmmt	$\mathbf{T}^T$	\mmtt			$\mathbf{\Pi}^T$	\mmpit		
$\mathbf{G}^T$	\mmgt	$\mathbf{N}^T$	\mmnt	$\mathbf{U}^T$	\mmut			$\mathbf{\Sigma}^T$	\mmsigmat		

2.4 Special Vector and Matrix Notations

$\mathbf{0}$	\mvzero	$\mathbf{1}$	\mvone	$\mathbf{0}$	\mmzero	$\mathbf{1}$	\mmone

3 Useful Functions and Operators

d	\diff	diag	\diag	lcm	\lcm	var	\var	argmin	\argmin	card	\card
D	\Diff	eig	\eig	rand	\rand	corr	\corr	argmax	\argmax	dist	\dist
E	\Expect	tr	\tr	mean	\mean	conv	\conv	argopt	\argopt		

4 Useful Aliases and Generators

- \fracdiff{}{}: frac & diff operator, also provide \dfracdiff{}{} mode. For example, \fracdiff{u}{x} gets $\frac{\mathrm{d}u}{\mathrm{d}x}$, \dfracdiff{^2u}{x^2} gets $\dfrac{\mathrm{d}^2u}{\mathrm{d}x^2}$
- \fracdiffs{}: special frac & diff operator. For example, \fracdiffs{x} gets $\frac{\mathrm{d}}{\mathrm{d}x}$, \dfracdiffs{y} gets $\dfrac{\mathrm{d}}{\mathrm{d}y}$
- \fracpartial{}{}: frac & partial operator, also provide \dfracpartial{}{} mode. For example, \fracpartial{u}{x} gets $\frac{\partial u}{\partial x}$, \dfracpartial{^2u}{x^2} gets $\dfrac{\partial^2 u}{\partial x^2}$
- \fracpartials{}: special frac & partial operator. For example, \fracpartials{x} gets $\frac{\partial}{\partial x}$, \dfracpartials{y} gets $\dfrac{\partial}{\partial y}$
- \mclosure{}, \mclosuresquare{}, \mclosurebrace{}: auto height brackets, eg $\left\{\left[\left(a^2+b^2\right)^2\right]^2\right\}$
- \mfwhen{}{}: create a symbol |, eg \mfwhen{\fracpartial{u}{t}}{x=5} gets $\frac{\partial u}{\partial t}\Big|_{x=5}$
- \mvct{}{}, \mvctz{}{}: row vector creator, eg \mvct{a}{n} gets $(a_1, a_2, \ldots, a_n)$, \mvctz{a}{n} gets $(a_0, a_1, \ldots, a_n)$
- \mvctt{}{}, \mvctzt{}{}: column vector creator, eg \mvctt{a}{n} gets $(a_1, a_2, \ldots, a_n)^T$, \mvctzt{a}{n} gets $(a_0, a_1, \ldots, a_n)^T$
- \mequlist{}: provided a list of equations, eg \mequlist{x + y &= 10 \\ 4x + 2y &= 30} gets $\begin{cases} x+y=10 \\ 4x+2y=30 \end{cases}$, also provide environment equlist, which is similar with the cases environment