Math-Symbols-in-LaTeX-Manual

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Contents

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 Notations

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

A	\mta	B	\mtb	C	\mtc	D	\mtd	E	\mte	F	\mtf	G	\mtg
H	\mth	I	\mti	J	\mtj	K	\mtk	L	\mtl	M	\mtm	N	\mtn
O	\mto	P	\mtp	Q	\mtq	R	\mtr	S	\mts	T	\mtt		
U	\mtu	V	\mtv	W	\mtw	X	\mtx	Y	\mty	Z	\mtz		

2.5 Special vector and matrix notation

$\mathbf{0}$	\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