

A.1 Hebrew letters

Type:	Print:	Type:	Print:
\aleph	×	\beth	コ
\daleth	٦	\gimel	I

All symbols but \all aleph need the amssymb package.

A.2 Greek characters

Type:	Print:	Type:	Print:	Type:	Print:
\alpha	α	\beta	β	\gamma	γ
\digamma	F	\delta	δ	\epsilon	ϵ
\varepsilon	ε	\zeta	ζ	\eta	η
\theta	θ	\vartheta	ϑ	\iota	ι
\kappa	κ	\varkappa	×	\lambda	λ
\mu	μ	\nu	ν	\xi	ξ
\pi	π	\varpi	ϖ	\rho	ho
\varrho	ϱ	\sigma	σ	\varsigma	ς
\tau	au	\upsilon	v	\phi	ϕ
\varphi	φ	\chi	χ	\psi	ψ
\omega	ω				

 $\verb|\digamma| and \verb|\varkappa| require the amssymb| package.$

Type:	Print:	Type:	Print:
\Gamma	Γ	\varGamma	Γ
\Delta	Δ	\varDelta	Δ
\Theta	Θ	\varTheta	Θ
\Lambda	Λ	\varLambda	Λ
\Xi	Ξ	\varXi	[<u>-</u>]
\Pi	Π	\varPi	П
\Sigma	Σ	\varSigma	Σ
\Upsilon	Υ	\varUpsilon	γ
\Phi	Φ	\varPhi	Φ
\Psi	Ψ	\varPsi	Ψ
\Omega	Ω	\varOmega	Ω

All symbols whose name begins with $\ensuremath{\text{var}}$ need the amsmath package.

A.3 LATEX binary relations

Type:	Print:	Type:	Print:
\in	\in	\ni	∋
\leq	\leq	\geq	\geq
\11	«	/gg	>>
\prec	\prec	\succ	\succ
\preceq	\preceq	\succeq	\succeq
\sim	\sim	\cong	\cong
\simeq	\simeq	\approx	\approx
\equiv	≡	\doteq	Ė
\subset	\subset	\supset	\supset
\subseteq	\subseteq	\supseteq	\supseteq
\sqsubseteq		\sqsupseteq	\supseteq
\smile	\smile	\frown	$\overline{}$
\perp	\perp	\models	=
\mid		\parallel	
\vdash	\vdash	\dashv	\dashv
\propto	\propto	\asymp	\asymp
\bowtie	\bowtie		
\sqsubset		\sqsupset	
\Join	\bowtie		

The latter three symbols need the latexsym package.

A.4 AMS binary relations

Type:	Print:	Type:	Print:
\leqslant	\leq	\geqslant	≽
\eqslantless	<	\eqslantgtr	≽
\lesssim	\lesssim	\gtrsim	^
\lessapprox	≨	\gtrapprox	\gtrapprox
\approxeq	$ \cong $		
\lessdot	<	\gtrdot	≽
\111	***	/aaa	>>>
\lessgtr	≶	\gtrless	\geq
\lesseqgtr		\gtreqless	\\\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
\lesseqqgtr	\leq	\gtreqqless	\geq
\doteqdot	÷	\eqcirc	-
\circeq	<u>•</u>	\fallingdotseq	≒.
\risingdotseq	≓	\triangleq	\triangleq
\backsim	\sim	\thicksim	~
\backsimeq	\simeq	\thickapprox	≈
\preccurlyeq	\preccurlyeq	\succcurlyeq	≽
\curlyeqprec	\curlyeqprec	\curlyeqsucc	\succcurlyeq
\precsim	$\stackrel{\sim}{\sim}$	\succsim	\succeq
\precapprox	Y2 Y≈	\succapprox	\\
\subseteqq	\subseteq	\supseteqq	\supseteq
\Subset	€	\Supset	∋
\vartriangleleft	\triangleleft	\vartriangleright	\triangleright
\trianglelefteq	\leq	\trianglerighteq	\trianglerighteq
\vDash	⊨	\Vdash	I
\Vvdash	II⊢		
\smallsmile	\smile	\smallfrown	$\overline{}$
\shortmid	1	\shortparallel	П
\bumpeq	<u>~</u>	\Bumpeq	≎
\between	Ŏ	\pitchfork	ф
\varpropto	\propto	\backepsilon	Э
\blacktriangleleft	◄	\blacktriangleright	>
\therefore	<i>:</i> .	\because	::

All symbols require the amssymb package.

A.5 AMS negated binary relations

Type:	Print:	Type:	Print:
\ne	\neq	\notin	∉
\nless	\$	\ngtr	*
\nleq	≰	\ngeq	≱
\nleqslant	≰	\ngeqslant	≱
\nleqq	≨	\ngeqq	≱
\lneq	\leq	\gneq	\geq
\lneqq	≨	\gneqq	≩
\lvertneqq	\leqq	\gvertneqq	\geq
\lnsim	⋦	\gnsim	\gtrsim
\lnapprox	≨	\gnapprox	⋧
\nprec		\nsucc	$ \neq$
\npreceq	\npreceq	\nsucceq	≱
\precneqq	$\not \supseteq$	\succneqq	≽
\precnsim	$\stackrel{\scriptstyle \sim}{\scriptstyle \sim}$	\succnsim	≿
\precnapprox	$ \stackrel{\prec}{pprox} $	\succnapprox	≿ ≋
\nsim	~	\ncong	≇
\nshortmid	ł	\nshortparallel	Ħ
\nmid	†	\nparallel	#
\nvdash	$\not\vdash$	\nvDash	¥
\nVdash	\mathbb{H}	\nVDash	⊭
\ntriangleleft		\ntriangleright	$\not\succ$
\ntrianglelefteq	⊉	\ntrianglerighteq	⊭
\nsubseteq	⊈	\nsupseteq	⊉
\nsubseteqq	$\not\sqsubseteq$	\nsupseteqq	⊉
\subsetneq	\subsetneq	\supsetneq	\supseteq
\varsubsetneq	≨	\varsupsetneq	⊋
\subsetneqq	\subsetneq	\supsetneqq	$\displaystyle\mathop{\supseteq}_{\neq}$
\varsubsetneqq	≨	\varsupsetneqq	\supseteq

All symbols but \ne require the amssymb package.

A.6 Binary operations

Type:	Print:	Type:	Print:
\pm	±	\mp	Ŧ
\times	×	\cdot	•
\circ	0	\bigcirc	\bigcirc
\div	÷	\diamond	\Diamond
\ast	*	\star	*
\cap	\cap	\cup	\cup
\sqcap	П	\sqcup	Ц
\wedge	\wedge	\vee	\vee
\triangleleft	◁	\triangleright	\triangleright
\bigtriangleup	\triangle	\bigtriangledown	∇
\oplus	\oplus	\ominus	\ominus
\otimes	\otimes	\oslash	\oslash
\odot	\odot	\bullet	•
\dagger	†	\ddagger	‡
\setminus	\	\uplus	\forall
\wr	}	\amalg	П
\lhd	◁	\rhd	\triangleright
\unlhd	⊴	\unrhd	⊵
\dotplus	÷	\centerdot	•
\ltimes	\bowtie	\rtimes	\rtimes
\leftthreetimes	\searrow	\rightthreetimes	/
\circleddash	\bigcirc	\smallsetminus	\
\barwedge	$\overline{\wedge}$	\doublebarwedge	$\overline{\overline{\wedge}}$
\curlywedge	人	\curlyvee	Υ
\veebar	$\underline{\vee}$	\intercal	Т
\Cap	$ \ \ \bigcirc$	\Cup	W
\circledast	*	\circledcirc	0
\boxminus	\Box	\boxtimes	\boxtimes
\boxdot		\boxplus	\blacksquare
\divideontimes	*		
\And	&		

This table is divided into four parts. The first part contains the binary operations in LATEX. The second part requires the latexsym package. The third part contains the $\mathcal{A}_{\mathcal{M}}\mathcal{S}$ additions; they require the amssymb package. The symbol \And requires the amsmath package.

A.7 Arrows

Type:	Print:	Type:	Print:
\leftarrow	←	\rightarrow or \to	\rightarrow
\longleftarrow	←—	\longrightarrow	\longrightarrow
\Leftarrow	\Leftarrow	\Rightarrow	\Rightarrow
\Longleftarrow	\iff	\Longrightarrow	\Longrightarrow
\leftrightarrow	\longleftrightarrow	\longleftrightarrow	\longleftrightarrow
\Leftrightarrow	\Leftrightarrow	\Longleftrightarrow	\iff
\uparrow	↑	\downarrow	\downarrow
\Uparrow	\uparrow	\Downarrow	\Downarrow
\updownarrow	\uparrow	\Updownarrow	\$
\nearrow	/	\searrow	\$
\swarrow	/	\nwarrow	_
\mapsto	\mapsto	\longmapsto	\longmapsto
\hookleftarrow	\leftarrow	\hookrightarrow	\hookrightarrow
\leftharpoonup		\rightharpoonup	
\leftharpoondown		\rightharpoondown	$\overline{}$
\rightleftharpoons	\rightleftharpoons		
\leadsto	\sim		
\leftleftarrows	otin	\rightrightarrows	\Rightarrow
\leftrightarrows	$\stackrel{\longleftarrow}{\Longrightarrow}$	\rightleftarrows	ightleftarrows
\Lleftarrow	\Leftarrow	\Rrightarrow	\Rightarrow
\twoheadleftarrow	~~	\twoheadrightarrow	\longrightarrow
\leftarrowtail	\leftarrow	\rightarrowtail	\rightarrowtail
\looparrowleft	\leftarrow	\looparrowright	\rightarrow
\upuparrows	$\uparrow\uparrow$	\downdownarrows	$\downarrow\downarrow$
\upharpoonleft	1	\upharpoonright	1
\downharpoonleft	1	\downharpoonright	ļ
\leftrightsquigarrow	< ~~→	\rightsquigarrow	~ →
\multimap	0		
\nleftarrow	\	\nrightarrow	\rightarrow
\nLeftarrow	#	\nRightarrow	\Rightarrow
\nleftrightarrow	$\leftrightarrow \rightarrow$	\nLeftrightarrow	#

This table is divided into three parts. The top part contains the symbols provided by LATEX; the last command, \leadsto, requires the latexsym package. The middle table contains the $\mathcal{A}_{\mathcal{M}}\mathcal{S}$ arrows; they all require the amssymb package. The bottom table lists the negated arrow symbols; they also require amssymb.

A.8 Miscellaneous symbols

Type:	Print:	Type:	Print:
\hbar	\hbar	\ell	ℓ
\imath	\imath	\jmath	J
/wp	Ø	\Re	\Re
\Im	3.	\partial	∂
\infty	∞	\prime	1
\emptyset	Ø	\backslash	\
\forall	\forall	\exists	3
\smallint	\int	\triangle	\triangle
\surd	$\sqrt{}$	\Vert	
\top	Τ	\bot	\perp
\P	\P	\S	§
\dag	†	\ddag	‡
\flat	b	\natural	þ
\sharp	#	\angle	§ ‡ ↓ ∠ ♦
\clubsuit	*	\diamondsuit	\Diamond
\heartsuit	\Diamond	\spadesuit	^
\neg	_		
\Box		\Diamond	\Diamond
\mho	Ω		
\hslash	\hbar	\complement	С
\backprime	1	\vartriangle	Δ
\Bbbk	\Bbbk	\varnothing	Ø
\diagup	/	\diagdown	
\blacktriangle	A	\blacktriangledown	▼
\triangledown	∇	\Game	G
\square		\blacksquare	
\lozenge	\Diamond	\blacklozenge	♦
\measuredangle	4	\sphericalangle	⋖
\circledS	S	\bigstar	*
\Finv	Е	\eth	\mathfrak{G}
\nexists	∄		

This table is divided into two parts. The top part contains the symbols provided by LATEX; the last three commands require the latexsym package. The bottom table lists symbols from the $\mathcal{A}_{\mathcal{M}}\mathcal{S}$; they all require the amssymb package.

A.9 Math spacing commands

Short form:	Full form:	Size:	Short form:	Full form:
	\thinspace	Ш	\!	\negthinspace
\:	\medspace	Ш		\negmedspace
\;	\thickspace	U		\negthickspace
	\qquad			

The $\mbox{\sc height}$ medspace, $\mbox{\sc height}$ heightspace, and $\mbox{\sc height}$ negthickspace commands require the amsmath package.

A.10 Delimiters

Name:	Type:	Print:	Name:	Type:	Print:
Left paren	((Right paren))
Left bracket	[[Right bracket]]
Left brace	\{	{	Right brace	\}	}
Reverse slash	\backslash	\	Forward slash	/	/
Left angle	\langle	<	Right angle	\rangle	\rangle
Vertical line			Double vert. line	\	
Left floor	\lfloor	Ĺ	Right floor	\rfloor	
Left ceiling	\lceil	ſ	Right ceiling	\rceil	7
Upper left corner	\ulcorner	Γ	Upper right corner	\urcorner	٦
Lower left corner	\llcorner	L	Lower right corner	\lrcorner	٦

The corners require the amsmath package.

Name:	Type:	Print:
Upward arrow	\uparrow	1
Double upward arrow	\Uparrow	\uparrow
Downward arrow	\downarrow	\downarrow
Double downward arrow	\Downarrow	\Downarrow
Up-and-down arrow	\updownarrow	\uparrow
Double up-and-down arrow	\Updownarrow	\$

A.11 Operators

\arccos	\arcsin	\arctan	\arg
\cos	\cosh	\cot	\coth
\csc	\dim	\exp	\hom
\ker	\lg	\ln	\log
\sec	\sin	\sinh	\tan
\tanh			
\varliminf	\varlimsup	\varinjlim	\varprojlim

The \vert commands require the amsmath package.

\det	\gcd	\inf	\injlim
\lim	\liminf	\limsup	\max
\min	\projlim	\Pr	\sup

The $\inj lim\ and\ projlim\ commands$ require the amsmath package.

Type:	Inline	Displayed	Type:	Inline	Displayed
\prod_{i=1}^{n}	$\prod_{i=1}^{n}$	$\prod_{i=1}^{n}$	\coprod_{i=1}^{n}	$\coprod_{i=1}^{n}$	$\coprod_{i=1}^{n}$
\bigcap_{i=1}^{n}	$\bigcap_{i=1}^n$	$\bigcap_{i=1}^{n}$	\bigcup_{i=1}^{n}	$\bigcup_{i=1}^n$	$\bigcup_{i=1}^{n}$
\bigwedge_{i=1}^{n}	$\bigwedge_{i=1}^n$	$\bigwedge_{i=1}^{n}$	\bigvee_{i=1}^{n}	$\bigvee_{i=1}^{n}$	$\bigvee_{i=1}^{n}$
\bigsqcup_{i=1}^{n}	$\bigsqcup_{i=1}^{n}$	$\bigsqcup_{i=1}^{n}$	\biguplus_{i=1}^{n}	$\biguplus_{i=1}^n$	$\bigcup_{i=1}^{n}$
\bigotimes_{i=1}^{n}	$\bigotimes_{i=1}^n$	$\bigotimes_{i=1}^{n}$	\bigoplus_{i=1}^{n}	$\bigoplus_{i=1}^n$	$\bigoplus_{i=1}^{n}$
\bigodot_{i=1}^{n}	$\bigcirc_{i=1}^n$	$\bigcup_{i=1}^{n}$	\sum_{i=1}^{n}	$\sum_{i=1}^{n}$	$\sum_{i=1}^{n}$

A.12 Math accents

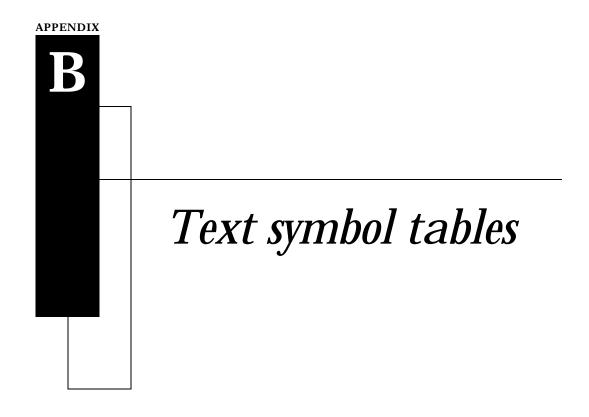
\hat{a}	\hat{a}	\Hat{a}	\hat{a}	\widehat{a}	\widehat{a}	a\sphat	$a^{}$
\tilde{a}	\tilde{a}	\Tilde{a}	\tilde{a}	\widetilde{a}	\widetilde{a}	a\sptilde	a^{\sim}
\acute{a}	\acute{a}	\Acute{a}	$cute{a}$				
\bar{a}	\bar{a}	\Bar{a}	\bar{a}				
\breve{a}	$reve{a}$	\Breve{a}	$reve{a}$			a\spbreve	a $$
\check{a}	\check{a}	\Check{a}	\check{a}			a\spcheck	a^{\vee}
\dot{a}	\dot{a}	\Dot{a}	\dot{a}			a\spdot	a.
\ddot{a}	\ddot{a}	\Ddot{a}	\ddot{a}			a\spddot	a··
\dddot{a}	\ddot{a}					a\spdddot	a···
\ddddot{a}	\ddot{a}						
\grave{a}	à	\Grave{a}	\grave{a}	\imath	\imath		
\vec{a}	\vec{a}	\Vec{a}	\vec{a}	\jmath	J		

The \dots and \dots commands and all the capitalized commands require the amsmath package; the commands in the fourth column require the amsxtra package.

A.13 Math font commands

Type:	Print:
\mathbf{A}	\mathbf{A}
\mathit{A}	A
A	Α
\mathrm{A}	A
\mathtt{A}	Α
\mathnormal{A}	A
\mathbb{A}	A
\mathfrak{A}	\mathfrak{A}
\mathcal{A}	\mathcal{A}
\boldsymbol{\alpha}	α

The $\mbox{\mbox{$\mbox{}\mbox{\mbo



B.1 Special text characters

Type:	Print:	Type:	Print:	Type:	Print:
\#	#	\\$	\$	\%	%
\&	&	\~{}	~	_	_
\^{}	^	\{	{	\}	}
\$ \$		@	@	\$*\$	*
		\$\backslash\$	\		

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B.2 Text accents

Type:	Print:	Type:	Print:	Type:	Print:
\'{o}	ò	\'{0}	ó	\"{0}	ö
\H{o}	ő	\^{o}	ô	\~{o}	õ
\v{o}	ŏ	\u{o}	ŏ	\={o}	ō
\b{o}	Ō	\.{0}	ò	\d{o}	ò
\c{o}	Q	\r{o}	ő	\t{oo}	oo
\i	1			\j	J

B.3 Some European characters

Type:	Print:	Type:	Print:	Type:	Print:
\aa	å	\AA	Å	\ae	æ
\AE	Æ	\0	Ø	\0	Ø
\oe	œ	\OE	Œ	\1	ł
\L	Ł	\ss	В	\SS	SS
3,	i	! `	i		

B.4 Extra text symbols

Type:	Print:
\dag	†
\ddag	‡
\S	8
\P	\P
\copyright	©
\pounds	£
\textbullet	•
\textvisiblespace	_
$\text{\textcircled}\{a\}$	(a)
\textperiodcentered	

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B.5 Text spacing commands

Short form:	Full form:	Size:	Short form:	Full form:
	\thinspace	Ш	\!	\negthinspace
\:	\medspace	П		\negmedspace
\;	\thickspace	C		\negthickspace
		Ш		
	\qquad			

The $\mbox{\sc hedspace}$, $\mbox{\sc hedspace}$, and $\mbox{\sc hedspace}$, and $\mbox{\sc hedspace}$, and $\mbox{\sc hedspace}$, \mbo

B.6 Text font commands

command with argument	command declaration	switch to
	{\normalfont}	document font family
	{\rmfamily}	roman font family
	{\sffamily}	sans serif font family
	{\ttfamily}	typewriter style font family
	{\upshape}	upright shape
	{\itshape}	italic shape
	{\slshape}	slanted shape
	{\normalfont}	default font
	{\scshape}	SMALL CAPITALS
	{\em}	emphasis
	{\bfseries}	bold (extended)
	{\mdseries}	normal weight and width

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B.7 Text font size changes

\tiny sample text \scriptsize sample text\footnotesize sample text \small sample text \normalsize sample text sample text \large sample text \Large sample text \LARGE sample text \huge sample text \Huge

B.8 AMS text font size changes

\Tiny
\large
\tiny
\Large
\SMALL
\normalsize

\LARGE \Small \huge \small \Huge