Introduction to LATEX

Appendix 1: Symbol Table

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Symbol tables from Ishort

The following tables demonstrate all the symbols normally accessible from $\underline{\mathsf{math}}\ \mathsf{mode}.$ Note that some tables show symbols only accessible after loading the amssymb package in the preamble of your document¹. If the $\mathcal{A}_{\mathcal{M}}\mathcal{S}$ package and fonts are not installed on your system, have a look at CTAN:pkg/amslatex. An even more comprehensive list of symbols can be found at CTAN:info/symbols/comprehensive.

Table: Math Mode Accents.

```
\hat{a}
                         \check{a}
                                              \tilde{a}
à
   \grave{a}
                     à
                         \dot{a}
                                         ä
                                              \ddot{a}
                     ā
                                       ÂAÂ
ā
   \bar{a}
                       \vec{a}
                                              \widehat{AAA}
                                       \widetilde{AAA}
   \acute{a}
                     ă
                         \breve{a}
                                              \widetilde{AAA}
å
    \mathring{a}
```

¹The tables were derived from symbols.tex by David Carlisle and subsequently changed extensively as suggested by Josef Tkadlec.

Table: Greek Letters.

There is no uppercase of some of the letters like Λ Beta and so on, because they look the same as normal roman letters: A, B...

α	\alpha	θ	\theta	0	0	v	\upsilon
β	\beta	ϑ	$\$ vartheta	π	\pi	ϕ	\phi
γ	\gamma	ι	\iota	ϖ	\varpi	φ	\varphi
δ	\delta	κ	\kappa	ρ	\rho	χ	\chi
ϵ	\epsilon	λ	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	ϱ	\varrho	ψ	\psi
ε	$\vert varepsilon$	μ	\mu	σ	\sigma	ω	\omega
ζ	\zeta	ν	\nu	ς	\varsigma		
η	\eta	ξ	\xi	au	\tau		
Γ	\Gamma	٨	\Lambda	Σ	\Sigma	Ψ	\Psi
Δ	\Delta	Ξ	\Xi	Υ	Υ	Ω	Ω
Θ	\Theta	П	\Pi	Φ	\Phi		

Table: Binary Relations.

You can negate the following symbols by prefixing them with a \not command.

```
<
     \leq or \le
                              \geq or \ge
                                                      \equiv
                                                 \equiv
«
     \11
                        \gg
                              \gg
                                                      \doteq
                                                      \sim
\prec
     \prec
                              \succ
                                                 \sim
\preceq
     \preceq
                              \succeq
                                                      \simeq
\subset
     \subset
                              \supset
                                                      \approx
                                                 \approx
\subseteq
                                                 \cong
     \subseteq
                              \supseteq
                                                      \cong
     \sqsubset a
                              \sqsupset a
                                                 M
                                                      \Join a
     \sqsubseteq
                              \sqsupseteq
                                                      \bowtie
                                                 \bowtie
\in
                        \ni
                              \ni , \owns
     \in
                                                      \propto
                                                 \propto
\vdash
                              \dashv
     \vdash
                                                      \models
      \mid
                              \parallel
                                                      \perp
      \smile
                              \frown
                                                      \asymp
                                                 \simeq
                        ∉
                              \notin
                                                      \neq or \ne
                                                 \neq
```

^aUse the latexsym package to access this symbol

Table: Binary Operators.

+	+	_	_		
\pm	\pm	\mp	\mp	◁	\triangleleft
•	\cdot	÷	\div	\triangleright	\triangleright
×	\times	\	\setminus	*	\star
\cup	\cup	\cap	\cap	*	\ast
\sqcup	\sqcup	П	\sqcap	0	\circ
\vee	\vee , \lor	\wedge	\wedge , \land	•	\bullet
\oplus	\oplus	\ominus	\ominus	\Diamond	\diamond
\odot	\odot	\oslash	\oslash	\forall	\uplus
\otimes	\otimes	\bigcirc	\bigcirc	П	\amalg
\triangle	\bigtriangleup	∇	\bigtriangledown	†	\dagger
\triangleleft	\lhd ^a	\triangleright	\rhd ^a	‡	\ddagger
\leq	\unlhd ^a	⊵	\unrhd ^a	}	\wr

Table: BIG Operators.

\sum	\sum	U	\bigcup	V	\bigvee
Π	\prod	\cap	\bigcap	\wedge	\bigwedge
\coprod	\coprod	\sqcup	\bigsqcup	+	\biguplus
ſ	\int	∮	\oint	\odot	\bigodot
\oplus	\bigoplus	\otimes	\bigotimes		

Table: Arrows as Accents.

\overrightarrow{AB}	\overrightarrow{AB}	\overrightarrow{AB}	\underrightarrow{AB}
ÁΒ	\overleftarrow{AB}	Ą₿	\underleftarrow{AB}
Ä₿	$\verb \overleftrightarrow{AB} $	₽B	\underleftrightarrow{AB}

Table: Arrows.

\leftarrow	\leftarrow or \gets	\leftarrow	$\label{longleftarrow}$
\rightarrow	\rightarrow or \to	\longrightarrow	$\label{longright} \$
\leftrightarrow	\leftrightarrow	\longleftrightarrow	$\label{longleftrightarrow}$
\Leftarrow	\Leftarrow	\leftarrow	\Longleftarrow
\Rightarrow	\Rightarrow	\Longrightarrow	\Longrightarrow
\Leftrightarrow	\Leftrightarrow	\iff	\Longleftrightarrow
\mapsto	\mapsto	\longmapsto	$\label{longmapsto}$
\leftarrow	\hookleftarrow	\hookrightarrow	\hookrightarrow
_	\leftharpoonup	\rightarrow	\rightharpoonup
$\overline{}$	\leftharpoondown	\rightarrow	$\$ rightharpoondown
\rightleftharpoons	\rightleftharpoons	\iff	\iff (bigger spaces)
\uparrow	\uparrow	\downarrow	\downarrow
\$	\updownarrow	\uparrow	\Uparrow
\Downarrow	\Downarrow	\$	\Updownarrow
7	\nearrow	\searrow	\searrow
/	\swarrow	_	\nwarrow
\sim	\leadsto ^a		

^aUse the latexsym package to access this symbol

Table: Delimiters.

```
\uparrow
[ or \lbrack
                  ] or \rbrack
                                     \downarrow
\{ or \lbrace
                \} or \rbrace
                                    \updownarrow
\langle
                  \rangle
                                     \Uparrow
or \vert
                 \| or \Vert
                                    \Downarrow
                  \backslash
                                     \Updownarrow
\lfloor
                  \rfloor
\rceil
                  \lceil
```

Table: Large Delimiters.

```
      ( \lgroup )
      \rgroup ∫
      \lmoustache

      | \arrowvert |
      \Arrowvert |
      \bracevert

      \rmoustache
```

Table: Miscellaneous Symbols.

	\dots		\cdots	:	\vdots		\ddots
\hbar	\hbar	\imath	\imath	Ĵ	$\$ jmath	ℓ	\ell
\Re	\Re	\Im	\Im	×	\aleph	60	\wp
\forall	\forall	∃	\exists	Ω	\mho ^a	∂	\partial
/	,	1	\prime	Ø	\emptyset	∞	$\$
∇	\nabla	\triangle	$\$ triangle		\Box ^a	\Diamond	$\$ Diamond a
\perp	\bot	Τ	\top	_	\angle	\checkmark	\surd
\Diamond	\diamondsuit	\Diamond	\heartsuit	*	\clubsuit	•	\spadesuit
\neg	<text></text>	b	\flat	þ	\natural	#	\sharp

^aUse the latexsym package to access this symbol

Table: Non-Mathematical Symbols.

These symbols can also be used in text mode.

$$\dagger$$
 \dag § \S © \copyright ® \textregistered \ddagger \ddag ¶ \P £ \pounds % \%

Table: AMS Delimiters.

Table: $\mathcal{A}_{\mathcal{M}}\mathcal{S}$ Greek and Hebrew.

```
\digamma \digamma \varkappa \varkappa \beth \beth \gimel \gimel \daleth \daleth
```

Table: Math Alphabets.

Example	Command	Required package
ABCDEabcde1234	\mathrm{ABCDE abcde 1234}	
ABCDEabcde1234	\mathit{ABCDE abcde 1234}	
ABCDEabcde1234	\mathnormal{ABCDE abcde 1234}	
$\mathcal{ABCDE} \dashv \text{lin} \infty \in \ni \triangle$	\mathcal{ABCDE abcde 1234}	
\mathscr{ABCDE}	\mathscr{ABCDE abcde 1234}	mathrsfs
ABCDEabede1234	\mathfrak{ABCDE abcde 1234}	amsfonts or amssymb
ABCDEƏ⊬⊭⊭₽	\mathbb{ABCDE abcde 1234}	amsfonts or amssymb

Table: $A_{\mathcal{M}}S$ Binary Operators.

```
\dotplus
\dot{+}
                         \centerdot
    \ltimes
                         \rtimes
                                               \divideontimes
×
                    X
                                          *
U
    \doublecup
                    \bigcirc
                         \doublecap
                                               \smallsetminus
    \veebar
                         \barwedge
                                              \doublebarwedge
\blacksquare
                    \Box
                         \boxminus
                                               \circleddash
    \boxplus
\boxtimes
    \boxtimes
                    •
                         \boxdot
                                          (0)
                                              \circledcirc
    \intercal
                         \circledast
                                               \rightthreetimes
                    *
Υ
    \curlyvee
                         \curlywedge
                                               \leftthreetimes
                    X
```

Table: AMS Binary Relations.

```
\lessdot
                             \gtrdot
                                            ÷
                                                 \doteqdot
<∙
                        ⋗
\leq
     \leqslant
                        \geqslant
                             \geqslant
                                                 \risingdotseq
     \eqslantless
                        ≶
                             \eqslantgtr
                                            Έ.
                                                 \fallingdotseq
≦
                        \geq
     \leqq
                                                 \eqcirc
                             \geqq
                                            _
~
     \lll or \llless
                       >>>
                             \ggg
                                                 \circeq
\gtrsim
     \lesssim
                             \gtrsim
                                                 \triangleq
                        \lessapprox
                             \gtrapprox
                                                 \bumpeq
                             \gtrless
     \lessgtr
                                                 \Bumpeq
     \lesseqgtr
                             \gtreqless
                                                 \thicksim
     \lesseqqgtr
                             \gtreqqless
                                                 \thickapprox
                                            \approx
```

Table: $\mathcal{A}_{\mathcal{M}}\mathcal{S}$ Binary Relations. (... continue)

\preccurlyeq	\preccurlyeq	≽	\succcurlyeq	\approx	\approxeq
\Rightarrow	\curlyeqprec	\succcurlyeq	\curlyeqsucc	\sim	\backsim
$\stackrel{\sim}{\sim}$	\precsim	\succeq	\succsim	\geq	\backsimeq
\approx	\precapprox	X	\succapprox	F	\vDash
\subseteq	\subseteqq	\supseteq	\supseteqq	⊩	\Vdash
П	\shortparallel	∋	\Supset	$\parallel \vdash$	\Vvdash
◀	$\blue{blacktriangleleft}$	\supset	\sqsupset	€	$\begin{tabular}{ll} \textbf{backepsilon} \end{array}$
\triangleright	\vartriangleright	•:	\because	\propto	\varpropto
•	$\blue{blacktriangleright}$	€	\Subset	Ŏ	\between
\trianglerighteq	\trianglerighteq	$\overline{}$	\smallfrown	ф	\pitchfork
\triangleleft	\vartriangleleft	1	\shortmid	$\overline{}$	\smallsmile
⊴	\trianglelefteq	÷.	\therefore		\sqsubset

Table: $\mathcal{A}_{\mathcal{M}}\mathcal{S}$ Arrows.

←	\dashleftarrow	→	\dashrightarrow
otag	\leftleftarrows	\Rightarrow	\rightrightarrows
\leftrightarrows	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	ightleftarrows	\rightleftarrows
\Leftarrow	\Lleftarrow	\Rightarrow	\Rrightarrow
₩	\t twoheadleftarrow	\longrightarrow	\t
\leftarrow	\leftarrowtail	\rightarrowtail	\rightarrowtail
\leftrightharpoons	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	\rightleftharpoons	\rightleftharpoons
Ħ	\Lsh	Γ,	\Rsh
\leftarrow P	\looparrowleft	\rightarrow	\looparrowright
$ \wedge $	\curvearrowleft	\curvearrowright	\curvearrowright
Q	\circlearrowleft	\bigcirc	\circlearrowright
⊸ ∘	$\mbox{multimap}$	$\uparrow\uparrow$	\upuparrows
$\downarrow\downarrow$	\downdownarrows	1	\upharpoonleft
1	\upharpoonright	ļ	\downharpoonright
~→	\rightsquigarrow	~~ →	\leftrightsquigarrow

Table: $\mathcal{A}_{\mathcal{M}}\mathcal{S}$ Negated Binary Relations and Arrows.

*	\nless	\not	\ngtr	≨	\varsubsetneqq
≨	\lneq	≥	\gneq	₩ ₩	\varsupsetneqq
≰	\nleq	≱	\ngeq	⊈	\nsubseteqq
≰	\nleqslant	$\not\geq$	\ngeqslant	⊉	\nsupseteqq
≨	\lneqq	≩	\gneqq	†	\nmid
≨	\lvertneqq	≩	\gvertneqq	#	\nparallel
\$\\$\\#\\$#\\\$\\	\nleqq	X \$\ \\$\ X \$\ X \$\ X \$\ X \$\ X \$\ X \$\	\ngeqq	ł	\nshortmid
⋦	\lnsim	≥	\gnsim	Ħ	\nshortparallel
≨	\lnapprox	⋧	\gnapprox	~	\nsim
*	\nprec	¥	\nsucc	\ncong	\ncong
$\not \preceq$	\npreceq	$\not\succeq$	\nsucceq	\nvdash	\nvdash
≨	\precneqq	¥ ≽	\succneqq	¥	\nvDash
%Y%Y	\precnsim	%Y &Y	\succnsim	\mathbb{H}	\nVdash
≈	\precnapprox	≿≈	\succnapprox	¥	\nVDash
\subseteq	\subsetneq	⊋	\supsetneq	$\not \triangle$	\ntriangleleft
⊊	\varsubsetneq	⊋	\varsupsetneq	\not	\ntriangleright
⊈∪≢	\nsubseteq	2	\nsupseteq	⊉	\n
\subsetneq	\subsetneqq	\supseteq	\supsetneqq	⋭	\n
\leftarrow	\nleftarrow	\rightarrow	\nrightarrow	\leftrightarrow	\nleftrightarrow
#	\nLeftarrow	\Rightarrow	\nRightarrow	₩ _	\nLeftrightarrow

Table: $\mathcal{A}_{\mathcal{M}}\mathcal{S}$ Miscellaneous.

\hbar	\hbar	\hbar	\hslash	\Bbbk	\Bbbk
	\square		\blacksquare	(S)	\circledS
Δ	\vert vartriangle	A	$\blue{blacktriangle}$	С	\complement
∇	\triangledown	▼	$\blue{blacktriangledown}$	G	\Game
\Diamond	\lozenge	♦	\blacklozenge	*	\bigstar
_	\angle	4	\measuredangle		
/	\diagup		\diagdown	1	\backprime
∄	\nexists	F	\Finv	Ø	\varnothing
ð	\eth	⋖	\sphericalangle	Ω	\mho