```
\alpha
                      \theta
                           \hat{t}
                                                                  \tau
\alpha
                                          o
                                               0
\beta
     \beta
                           \vartheta
                                                                   \upsilon
                                         \pi
                                               \pi
     \gamma
                           \iota
                                               \varpi
                                                                  \phi
                                          \varpi
\delta
     \delta
                                                                  \varphi
                           \kappa
                                               \rho
                      \kappa
                                          \rho
     \epsilon
                           \lambda
                                               \varrho
                                                                  \chi
                      \lambda
                                                              \chi
     \varepsilon
                                               \sigma
                                                                   \psi
\varepsilon
                           \mu
                                                              \psi
                      \mu
     \zeta
                           \nu
                                               \varsigma
                                                                   \omega
                                                             \omega
     \eta
                      ξ
                           \xi
Γ
     \Gamma
                      Λ
                                          \sum
                                                                  \Psi
                           \Lambda
                                               \Sigma
Δ
     \Delta
                      Ξ
                                          Υ
                                               \Upsilon
                           \Xi
                                                              \Omega
                                                                  \Omega
                                               \Phi
     \Theta
                      П
                           \Pi
```

Table 1: Greek Letters

\pm	\pm	\cap	\cap	\Diamond	\diamond	\oplus	\oplus
Ŧ	\mp	\cup	\cup	Δ	\bigtriangleup	\ominus	\ominus
×	\times	\forall	\uplus	∇	\bigtriangledown	\otimes	\otimes
÷	\div	П	\sqcap	\triangleleft	\triangleleft	\oslash	\oslash
*	\ast	\sqcup	\sqcup	\triangleright	\triangleright	\odot	\odot
*	\star	\vee	\vee	\triangleleft	$\backslash \mathtt{lhd}^*$	\bigcirc	\bigcirc
0	\circ	\wedge	\wedge	\triangleright	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	†	\dagger
•	\bullet	\	\setminus	\leq	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	‡	\ddagger
	\cdot	?	\wr	\trianglerighteq	\unrhd^*	П	\amalg
	+	_	_				

^{*} Not predefined in LATEX 2_{ε} . Use one of the packages latexsym, amsfonts or amssymb.

Table 2: Binary Operation Symbols

\leq	\leq	\geq	\geq	\equiv	\equiv	=	\models
\prec	\prec	\succ	\succ	\sim	\sim	\perp	\perp
\preceq	\preceq	\succeq	\succeq	\simeq	\simeq		\mid
«	\11	\gg	\gg	\asymp	\agnormalisnment		\parallel
\subset	\subset	\supset	\supset	\approx	\approx	\bowtie	\bowtie
\subseteq	\subseteq	\supseteq	\supseteq	\cong	\cong	\bowtie	\Join^*
	\sqsubset*		\sqsupset^*	\neq	\neq	\smile	\smile
	\sqsubseteq	\supseteq	\sqsupseteq	\doteq	\doteq	$\overline{}$	\frown
\in	\in	\ni	\ni	\propto	\propto	=	=
\vdash	\vdash	\dashv	\dashv	<	<	>	>
	•						

^{*} Not predefined in LATEX 2_{ε} . Use one of the packages latexsym, amsfonts or amssymb.

Table 3: Relation Symbols

, , ; ; : \colon . \dotp

Table 4: Punctuation Symbols

\leftarrow	\leftarrow	←	\longleftarrow	\uparrow	\uparrow
\Leftarrow	\Leftarrow	\iff	\Longleftarrow	\uparrow	\Uparrow
\longrightarrow	\rightarrow	\longrightarrow	\longrightarrow	\downarrow	\downarrow
\Rightarrow	\Rightarrow	\Longrightarrow	\L ongrightarrow	\Downarrow	\Downarrow
\longleftrightarrow	\leftrightarrow	\longleftrightarrow	$\label{longleftrightarrow}$	\uparrow	\updownarrow
\Leftrightarrow	\Leftrightarrow	\iff	\L ongleftrightarrow	1	\Updownarrow
\mapsto	\mapsto	\longmapsto	$\label{longmapsto} \$	7	\nearrow
\leftarrow	\hookleftarrow	\hookrightarrow	\hookrightarrow	\	\searrow
_	\leftharpoonup	\rightarrow	\rightharpoonup	/	\swarrow
$\overline{}$	\leftharpoondown	\rightarrow	\rightharpoondown		\nwarrow
\rightleftharpoons	\rightleftharpoons	\sim	$\label{leadsto} \$		

 $[\]rightleftharpoons$ \rightarroons \leadsto \leads to \text{* Not predefined in IATEX } 2\varepsilon\$. Use one of the packages latexsym, amsfonts or amssymb.

Table 5: Arrow Symbols

	\ldots		\cdots	÷	\vdots	٠٠.	\ddots
×	\aleph	1	\prime	\forall	\forall	∞	\infty
\hbar	\hbar	Ø	\emptyset	\exists	\exists		\Box^*
\imath	$\$ imath	∇	\nabla	\neg	\neg	\Diamond	\Diamond^*
Ĵ	$\$ jmath		\surd	b	\flat	\triangle	\triangle
ℓ	\ell	Ť	\top	þ	\natural	*	\clubsuit
Ø	\wp	\perp	\bot	#	\sharp	\Diamond	\diamondsuit
\Re	\Re		\ I	\	\backslash	\Diamond	\heartsuit
3	\Im	_	\angle	∂	\partial	•	\spadesuit
Ω	$\mbox{\mbo}$		•		1		

^{*} Not predefined in LATEX $2_{\mathcal{E}}$. Use one of the packages latexsym, amsfonts or amssymb.

Table 6: Miscellaneous Symbols

\sum	\sum	\cap	\bigcap	\odot	\bigodot
$\overline{\prod}$	\prod	Ú	\bigcup	\otimes	\bigotimes
I	\coprod	Ù	\bigsqcup	\oplus	\bigoplus
ſ	$\$ int	V	\bigvee	\forall	\biguplus
∮	\oint	\wedge	\bigwedge		

Table 7: Variable-sized Symbols

\arccos	\cos	\csc	\exp	\ker	\label{limsup}	\mbox{min}	\sinh
\arcsin	\cosh	\deg	\gcd	\lg	\ln	\Pr	\sup
\arctan	\cot	\det	\hom	\lim	\log	\sec	\tan
\arg	\coth	\dim	$\$ inf	\label{liminf}	\max	\sin	\tanh

Table 8: Log-like Symbols

Table 9: Delimiters

```
\rmoustache
                                         \lmoustache
                                                              \rgroup
                                                                                  \lgroup
                    \arrowvert
                                         \Arrowvert
                                                              \bracevert
                                       Table 10: Large Delimiters
               \hat{a}
                                 \acute{a}
                                                   \bar{a}
                                                                  \dot{a}
                                                                                  \breve{a}
                                               \bar{a}
                                                              \dot{a}
                                                                              \check{a}
               \check{a}
                                 \grave{a}
                                                   \sqrt{a}
                                                                  \ddot{a}
                                                                                   \tilde{a}
                                      Table 11: Math mode accents
                   \widetilde{abc}
                           \widetilde{abc}
                                                     \widehat{abc}
                                                             \widehat{abc}
                   \overleftarrow{abc}
                           \overleftarrow{abc}
                                                     \overrightarrow{abc}
                                                             \overrightarrow{abc}
                    \overline{abc}
                                                             \underline{abc}
                           \overline{abc}
                                                     abc
                    \widehat{abc}
                           \overbrace{abc}
                                                      abc
                                                              \underbrace{abc}
                                                      \sqrt[n]{abc}
                    \sqrt{abc}
                           \sqrt{abc}
                                                             \sqrt[n]{abc}
                           f,
                                                              \frac{abc}{xyz}
                                   Table 12: Some other constructions
                      \ulcorner \ulcorner \ulcorner \ulcorner \ulcorner
                                       Table 13: AMS Delimiters
\dashrightarrow
                                 \dashleftarrow
                                                              \leftleftarrows
                                                                                      \stackrel{\longleftarrow}{}
                                                                                           \leftrightarrows
\Lleftarrow
                                 \twoheadleftarrow
                                                              \leftarrowtail
                                                                                      \leftarrow
                                                                                           \looparrowleft
\leftrightharpoons
                                 \curvearrowleft
                                                              \circlearrowleft
                                                                                      \forall
                                                                                           \Lsh
                                                         Q
\upuparrows
                          1
                                 \upharpoonleft
                                                               \downharpoonleft
                                                                                           \multimap
                                                         ]
                                 \rightrightarrows
\leftrightsquigarrow
                                                         \Longrightarrow
                                                              \rightleftarrows
                                                                                           \rightrightarrows
                                                                                      \Rightarrow
                          \Rightarrow
\rightleftarrows
                                 \twoheadrightarrow
                                                               \rightarrowtail
                                                                                           \looparrowright
                                                                                      \rightarrow
\rightleftharpoons
                                 \curvearrowright
                                                               \circlearrowright

ightharpoons
                                                                                           \Rsh
                          \bigcirc
\downdownarrows
                                 \upharpoonright
                                                               \downharpoonright
                                                                                           \rightsquigarrow
                                         Table 14: AMS Arrows
          \nleftarrow
                                     \nrightarrow
                                                                                      \nRightarrow
                                                                \nLeftarrow ⇒
                                     \nLeftrightarrow
          \nleftrightarrow
                                ₩
                                    Table 15: AMS Negated Arrows
                                         \digamma \( \text{varkappa} \)
                                          Table 16: AMS Greek
```

 \Leftarrow

 \leftrightharpoons

 \prod

 $\overset{\leftrightsquigarrow}{\rightleftarrows}$

 \Rightarrow

Table 17: AMS Hebrew

J \beth J \daleth J \gimel

\hbar	\hbar	\hbar	\hslash	Δ	$\$ vartriangle	∇	$\$ triangledown
	\square	\Diamond	\lozenge	\odot	\circledS	_	\angle
4	\measuredangle	∄	\nexists	Ω	\mho	Ь	\Finv
G	\Game	\Bbbk	\Bbbk	1	\backprime	Ø	\varnothing
•	\blacktriangle	\blacksquare	\blacktriangledown		\blacksquare	•	\blacklozenge
_	(pracktriangre	•	(bracker rangicaown	_	(DIGCIDGGGIC	•	(514011101160
*	\bigstar	∢	\sphericalangle	C	\complement	ð	\eth
*/		▼	0	C	-	ð	

Table 18: AMS Miscellaneous

$\dot{+}$	\dotplus	\	\smallsetminus	\bigcap	\Cap	U	\Cup
$\overline{\wedge}$	\barwedge	$\underline{\vee}$	\veebar	$\bar{\wedge}$	\doublebarwedge	\Box	\boxminus
\boxtimes	\boxtimes	•	\boxdot	\blacksquare	\boxplus	*	\divideontimes
\bowtie	\ltimes	\rtimes	\rtimes	λ	\leftthreetimes	\angle	\rightthreetimes
人	\curlywedge	Υ	\curlyvee	\bigcirc	\circleddash	*	\circledast
0	\circledcirc		\centerdot	Т	\intercal		

Table 19: AMS Binary Operators

\leq	\leqq	\leq	\leqslant	<	\eqslantless	\lesssim	\lesssim
\lessapprox	\lessapprox	\approx	\approxeq	< .	\lessdot	~	\111
\leq	\lessgtr	\leq	\lesseqgtr	\leq	\lesseqqgtr	÷	\doteqdot
=	\risingdotseq	=	\fallingdotseq	\sim	\backsim	\leq	\backsimeq
\subseteq	\subseteqq	\subseteq	\Subset		\sqsubset	\preccurlyeq	\preccurlyeq
\Rightarrow	\curlyeqprec	$\stackrel{\sim}{\sim}$	\precsim	≋	\precapprox	\triangleleft	\vartriangleleft
\leq	\trianglelefteq	F	\vDash	Ϊŀ	\Vvdash	\smile	\smallsmile
$\overline{}$	\smallfrown	<u></u>	\bumpeq	≎	\Bumpeq	\geq	\geqq
\geqslant	\geqslant	≽	\eqslantgtr	\gtrsim	\gtrsim	≳	\gtrapprox
>	\gtrdot	>>>	\ggg	\geq	\gtrless	\ \&\ \\⊴	\gtreqless
\geq	\gtreqqless		\eqcirc	$\stackrel{\circ}{=}$	\circeq	\triangleq	\triangleq
~	\thicksim	\approx	\thickapprox	\supseteq	\supseteqq	\supset	\Supset
\supset	\sqsupset	\succcurlyeq	\succcurlyeq	\succ	\curlyeqsucc	\succeq	\succsim
≅	\succapprox	\triangleright	\vartriangleright	\geq	\trianglerighteq	⊩	\Vdash
1	\shortmid	П	\shortparallel	Ŏ	\between	\forall	\pitchfork
\propto	\varpropto	⋖	\blacktriangleleft	··.	\therefore	Э	\backepsilon
•	\blacktriangleright	·:·	\because				

Table 20: AMS Binary Relations

X XXXXXX \$\U\\\X\X\X\X\X\X\X\X\X\X\X\X\X\X\X\X\X\	\nless \lneq \lnapprox \precnapprox \nvdash \nsubseteq \varsubsetneqq \ngeqq \gnsim \nsucceq	# * * * * * * * * * * * * * * * * * * *	<pre>\nleq \lneqq \nprec \nsim \nvDash \subsetneq \ngtr \gneq \gnapprox \succnsim</pre>	K # X K K K K K K K K K K K K K K K K K	\nleqslant \lvertneqq \npreceq \nshortmid \ntriangleleft \varsubsetneq \ngeq \gneqq \succ \succnapprox	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	<pre>\nleqq \lnsim \precnsim \nmid \ntrianglelefteq \subsetneqq \ngeqslant \gvertneqq \nsucceq \ncong</pre>
	\gnsim	>≉	\gnapprox	7	\nsucc	$\not\succeq$	· •

Table 21: AMS Negated Binary Relations

```
\llceil
                                          \rrceil
                                                            \llfloor
                                                                           \rrfloor
                         \llbracket
                                      \rrbracket
                                       Table 22: stmaryrd Delimiters
     \Longmapsfrom
                              \Longmapsto
                                                     \Mapsfrom
                                                                                \Mapsto
     \nnearrow
                              \nnwarrow
                                                                                 \sswarrow
                                                     \ssearrow
     \shortdownarrow
                        \uparrow
                              \shortuparrow
                                                     \shortleftarrow
                                                                                 \shortrightarrow
     \longmapsfrom
                              \mapsfrom
                                                     \leftarrowtriangle
                                                                                \rightarrowtriangle
     \lightning
                              \rrparenthesis
                                                     \leftrightarroweq
                                                                                \leftrightarrowtriangle
                                        Table 23: stmaryrd Arrows
                            / \Arrownot |
                                             \Mapsfromchar | \Mapstochar
                            / \arrownot
                                             \mapsfromchar
                                  Table 24: stmaryrd Extension Characters
    \Ydown
                               \Yleft
                                                        \Yright
                                                                                     \Yup
                                                                                 人
Υ
    \baro
                               \bbslash
                                                        \binampersand
                                                                                 8
                                                                                     \bindnasrepma
    \boxast
                               \boxbar
                                                       \boxbox
                                                                                     \boxbslash
*
                          0
    \boxcircle
                          •
                               \boxdot
                                                   \boxempty
                                                                                 \square
                                                                                     \boxslash
Y
    \curlyveedownarrow
                          V
                               \curlyveeuparrow
                                                        \curlywedgedownarrow
                                                                                     \curlywedgeuparrow
                                                                                Ţ
\fatbslash
                               \fatsemi
                                                    \fatslash
                                                                                 \interleave
    \leftslice
                          M
                               \merge
                                                       \minuso
                                                                                     \moo
\Diamond
                                                   \Theta
                                                                                 \pm
    \nplus
                               \obar
                                                   \obslash
\oplus
                          \bigcirc
                                                        \oblong
                                                                                 0
\bigcirc
    \ogreaterthan
                           \bigcirc
                               \olessthan
                                                   \bigcirc
                                                       \ovee
                                                                                 \bigcirc
                                                                                     \owedge
    \rightslice
                               \sslash
                                                       \talloblong
                                                                                 \bigcirc
                                                                                     \varbigcirc
\Diamond
    \varcurlyvee
Υ
                               \varcurlywedge
                                                       \varoast
                                                                                 \bigcirc
                                                                                     \varobar
                           人
                                                   *
    \varobslash
                               \varocircle
                                                       \varodot
                                                                                     \varogreaterthan
0
                          (0)
                                                   \odot
                                                                                0
    \varolessthan
                           \Theta
                               \varominus
                                                       \varoplus
                                                                                     \varoslash
0
                                                   \oplus
                                                                                 0
    \varotimes
                          \bigcirc
                               \varovee
                                                   \bigcirc
                                                       \varowedge
                                                                                     \vartimes
                                   Table 25: stmaryrd Binary Operators
                       \bigbox
                                              \bigcurlyvee
                                                                       \bigcurlywedge
                       \biginterleave
                                              \bignplus
                                                                       \bigparallel
                       \bigsqcap
                                              \bigtriangledown
                                                                  Λ
                                                                       \bigtriangleup
                                Table 26: stmaryrd Large Binary Operators
        \inplus
                           \niplus
                                                \subsetplus
                                                                         \oplus
                                                                              \subsetpluseq
    \oplus
                       ∌
                                                \trianglelefteqslant
                                                                              \trianglerighteqslant
        \supsetplus
                           \supsetpluseq
                                           \triangleleft
                                    Table 27: stmaryrd Binary Relations
                                                         \ntrianglerighteqslant
                           \ntrianglelefteqslant ≱
                               Table 28: stmaryrd Negated Binary Relations
```

\Lbag

\Rbag

\lbag

\rbag

Required package

		кеquired package
ABCdef	\mathrm{ABCdef}	
ABCdef	\mathit{ABCdef}	
ABCdef	\mathnormal{ABCdef}	
\mathcal{ABC}	\mathcal{ABC}	
\mathcal{ABC}	\mathcal{ABC}	euscript with option: mathcal
	\mathscr{ABC}	euscript with option: mather
ABCdef	\mathfrak{ABCdef}	eufrak
\mathbb{ABC}	\mathbb{ABC}	amsfonts or amssymb

Table 29: Math Alphabets