Table 3: LaTeX 2ε Commands Defined to Work in Both Math and Text Mode

{		\{	_		_	‡	‡	\ddag	£		\pounds
}		\}	©	©	\copyright	…		\dots	§	§	\S
$	$	\$	†	†	\dag	¶	¶	\P			

The first symbol column represents the—sometimes "faked"—symbol that LaTeX 2ε provides by default. The second symbol column represents the symbol as redefined by textcomp (if textcomp redefines it). The textcomp package is generally required to typeset Table 3's symbols in italic, and some symbols additionally require the T1 font encoding for italic.

Table 4: $\mathcal{AMS}$ Commands Defined to Work in Both Math and Text Mode

✓	\checkmark	®	\circledR	✠	\maltese

Table 5: Non-ASCII Letters (Excluding Accented Letters)

å	\aa	Ð	\DH*	Ł	\L	ø	\o	þ	\th*
Å	\AA	Đ	\DJ*	ł	\l	œ	\oe	Þ	\TH*
Æ	\AE	đ	\dj*	Ŋ	\NG*	Œ	\OE		
æ	\ae	IJ	\IJ	ŋ	\ng*	ß	\ss		
ð	\dh*	ij	\ij	Ø	\O	SS	\SS		

* Not available in the OT1 font encoding. Use the fontenc package to select an alternate font encoding, such as T1.

Table 6: textgreek Upright Greek Letters

α	\textalpha	η	\texteta	ν	\textnu	τ	\texttau
β	\textbeta	ϑ	\texttheta	ξ	\textxi	υ	\textupsilon
γ	\textgamma	ι	\textiota	ο	\textomikron	φ	\textphi
δ	\textdelta	ϰ	\textkappa	π	\textpi	χ	\textchi
ε	\textepsilon	λ	\textlambda	ρ	\textrho	ψ	\textpsi
ζ	\textzeta	μ	\textmu*	σ	\textsigma	ω	\textomega
A	\textAlpha	H	\textEta	N	\textNu	T	\textTau
B	\textBeta	Θ	\textTheta	Ξ	\textXi	ϒ	\textUpsilon
Γ	\textGamma	I	\textIota	O	\textOmikron	Φ	\textPhi
Δ	\textDelta	K	\textKappa	Π	\textPi	X	\textChi
E	\textEpsilon	Λ	\textLambda	P	\textRho	Ψ	\textPsi
Z	\textZeta	M	\textMu	Σ	\textSigma	Ω	\textOmega

* Synonyms for \textmu include \textmicro and \textmugreek.

textgreek tries to use a Greek font that matches the body text. As a result, the glyphs may appear slightly different from the above.

Unlike upgreek (Table 191 on page 94), textgreek works in text mode.

The symbols in this table are intended to be used sporadically throughout a document (e.g., in phrases such as "β-decay"). In contrast, Greek body text can be typeset using the babel package's greek (or polutonikogreek) option—and, of course, a font that provides the glyphs for the Greek alphabet.

TABLE 50: Binary Operators

∐	\amalg	∪	\cup	⊕	\oplus	×	\times
∗	\ast	†	\dagger	⊘	\oslash	◁	\triangleleft
◯	\bigcirc	‡	\ddagger	⊗	\otimes	▷	\triangleright
▽	\bigtriangledown	⋄	\diamond	±	\pm	⊴	\unlhd*
△	\bigtriangleup	÷	\div	▷	\rhd*	⊵	\unrhd*
•	\bullet	◁	\lhd*	\	\setminus	⊎	\uplus
∩	\cap	∓	\mp	⊓	\sqcap	∨	\vee
·	\cdot	⊙	\odot	⊔	\sqcup	∧	\wedge
∘	\circ	⊖	\ominus	⋆	\star	≀	\wr

* Not predefined by the LaTeX 2ε core. Use the latexsym package to expose this symbol.

TABLE 51: $\mathcal{AMS}$ Binary Operators

⩒	\barwedge	⊚	\circledcirc	⊺	\intercal*
⊡	\boxdot	⊝	\circleddash	⋋	\leftthreetimes
⊟	\boxminus	⋓	\Cup	⋉	\ltimes
⊞	\boxplus	⋎	\curlyvee	⋌	\rightthreetimes
⊠	\boxtimes	⋏	\curlywedge	⋊	\rtimes
⋒	\Cap	⋇	\divideontimes	∖	\smallsetminus
∙	\centerdot	∔	\dotplus	⩡	\veebar
⊛	\circledast	⩖	\doublebarwedge		

* Some people use a superscripted \intercal for matrix transpose: "A^\intercal" ↦ "$A^{\intercal}$". (See the May 2009 comp.text.tex thread, "raising math symbols", for suggestions about altering the height of the superscript.) \top (Table 203 on page 96), T, and \mathsf{T} are other popular choices: "$A^{\top}$", "A^{T}", "A^{T}".

TABLE 52: stmaryrd Binary Operators

⧶	\baro	⫼	\interleave	⊛	\varoast
⧵	\bbslash	◅	\leftslice	⊍	\varobar
&	\binampersand	⩛	\merge	⊘	\varobslash
⅋	\bindnasrepma	⊖	\minuso	⊚	\varocircle
⧆	\boxast	⫫	\moo	⊙	\varodot
⧈	\boxbar	⨣	\nplus	⊖	\varogreaterthan
⧈	\boxbox	⊍	\obar	⊖	\varolessthan
⧅	\boxbslash	□	\oblong	⊖	\varominus
⧇	\boxcircle	⊘	\obslash	⊕	\varoplus
⊡	\boxdot	⊖	\ogreaterthan	⊘	\varoslash
□	\boxempty	⊖	\olessthan	⊗	\varotimes
⧄	\boxslash	⊘	\ovee	⊘	\varovee
⋟	\curlyveedownarrow	⊘	\owedge	⊘	\varowedge
⋎	\curlyveeuparrow	▷	\rightslice	⨯	\vartimes
⋏	\curlywedgedownarrow	⫽	\sslash	⟙	\Ydown
⋀	\curlywedgeuparrow	⫿	\talloblong	≺	\Yleft
⧹	\fatbslash	◯	\varbigcirc	≻	\Yright
⨟	\fatsemi	⋎	\varcurlyvee	⟘	\Yup
⧸	\fatslash	⋏	\varcurlywedge		

Table 72: Variable-sized Math Operators

$\bigcap$	`\bigcap`	$\bigotimes$	`\bigotimes`	$\bigwedge$	`\bigwedge`	$\prod$	`\prod`
$\bigcup$	`\bigcup`	$\bigsqcup$	`\bigsqcup`	$\coprod$	`\coprod`	$\sum$	`\sum`
$\bigodot$	`\bigodot`	$\biguplus$	`\biguplus`	$\int$	`\int`		
$\bigoplus$	`\bigoplus`	$\bigvee$	`\bigvee`	$\oint$	`\oint`		

Table 73: $\mathcal{AMS}$ Variable-sized Math Operators

$\iint$	`\iint`	$\iiint$	`\iiint`
$\iiiint$	`\iiiint`	$\int\cdots\int$	`\idotsint`

Table 74: stmaryrd Variable-sized Math Operators

$\bigboxplus$	`\bigbox`	$\biginterleave$	`\biginterleave`	$\bigsqcap$	`\bigsqcap`
$\bigcurlyvee$	`\bigcurlyvee`	$\bignplus$	`\bignplus`	$\bigtriangledown$	`\bigtriangledown`
$\bigcurlywedge$	`\bigcurlywedge`	$\bigparallel$	`\bigparallel`	$\bigtriangleup$	`\bigtriangleup`

Table 75: wasysym Variable-sized Math Operators

$\int$	`\int`	$\iint$	`\iint`	$\iiint$	`\iiint`
$\oint$	`\oint`	$\oiint$	`\oiint`		

If wasysym is loaded without package options then none of the preceding symbols are defined. However, `\varint` produces wasysym's `\int` glyph, and `\varoint` produces wasysym's `\oint` glyph.

If wasysym is loaded with the integrals option then all of the preceding symbols are defined, but `\varint` and `\varoint` are left undefined.

If wasysym is loaded with the nointegrals option then none of the preceding symbols, `\varint`, or `\varoint` are defined.

TABLE 87: prodint Variable-sized Math Operators

$\prod$	`\prodi`	$\prod$	`\Prodi`	$\prod$	`\PRODI`

prodint currently requires the author to manually specify `\prodi` for inlined expressions (`$...$`), `\Prodi` for displayed math (`\[...\]`), and `\PRODI` for displayed math involving tall integrands. The package does not define a product integral command that scales automatically akin to the symbols in Table 72.

TABLE 88: cmll Large Math Operators

$\parr$	`\bigparr`*	$\with$	`\bigwith`

* cmll defines `\biginvamp` as a synonym for `\bigparr`.

TABLE 89: Binary Relations

$\approx$	`\approx`	$\equiv$	`\equiv`	$\perp$	`\perp`	$\smile$	`\smile`
$\asymp$	`\asymp`	$\frown$	`\frown`	$\prec$	`\prec`	$\succ$	`\succ`
$\bowtie$	`\bowtie`	$\bowtie$	`\Join`*	$\preceq$	`\preceq`	$\succeq$	`\succeq`
$\cong$	`\cong`	$\mid$	`\mid`†	$\propto$	`\propto`	$\vdash$	`\vdash`
$\dashv$	`\dashv`	$\models$	`\models`	$\sim$	`\sim`		
$\doteq$	`\doteq`	$\parallel$	`\parallel`	$\simeq$	`\simeq`		

* Not predefined by the LaTeX 2ε core. Use the latexsym package to expose this symbol.

† The difference between `\mid` and `|` is that the former is a binary relation while the latter is a math ordinal. Consequently, LaTeX typesets the two with different surrounding spacing. Contrast "`P(A | B)`" ↦ "$P(A|B)$" with "`P(A \mid B)`" ↦ "$P(A \mid B)$".

TABLE 90: $\mathcal{AMS}$ Binary Relations

$\approxeq$	`\approxeq`	$\eqcirc$	`\eqcirc`	$\succapprox$	`\succapprox`
$\backepsilon$	`\backepsilon`	$\fallingdotseq$	`\fallingdotseq`	$\succcurlyeq$	`\succcurlyeq`
$\backsim$	`\backsim`	$\multimap$	`\multimap`	$\succsim$	`\succsim`
$\backsimeq$	`\backsimeq`	$\pitchfork$	`\pitchfork`	$\therefore$	`\therefore`
$\because$	`\because`	$\precapprox$	`\precapprox`	$\thickapprox$	`\thickapprox`
$\between$	`\between`	$\preccurlyeq$	`\preccurlyeq`	$\thicksim$	`\thicksim`
$\Bumpeq$	`\Bumpeq`	$\precsim$	`\precsim`	$\varpropto$	`\varpropto`
$\bumpeq$	`\bumpeq`	$\risingdotseq$	`\risingdotseq`	$\Vdash$	`\Vdash`
$\circeq$	`\circeq`	$\shortmid$	`\shortmid`	$\vDash$	`\vDash`
$\curlyeqprec$	`\curlyeqprec`	$\shortparallel$	`\shortparallel`	$\Vvdash$	`\Vvdash`
$\curlyeqsucc$	`\curlyeqsucc`	$\smallfrown$	`\smallfrown`		
$\doteqdot$	`\doteqdot`	$\smallsmile$	`\smallsmile`		

TABLE 91: $\mathcal{AMS}$ Negated Binary Relations

≇	\ncong	∦	\nshortparallel	⊯	\nVDash
∤	\nmid	≁	\nsim	⪹	\precnapprox
∦	\nparallel	⊁	\nsucc	⪵	\precnsim
⊀	\nprec	⋡	\nsucceq	⪺	\succnapprox
⋠	\npreceq	⊭	\nvDash	⪶	\succnsim
∤	\nshortmid	⊬	\nvdash		

TABLE 92: stmaryrd Binary Relations

⋵	\inplus	⋹	\niplus

TABLE 93: wasysym Binary Relations

⌐	\invneg	⇝	\leadsto	∝	\wasypropto
⋈	\Join	⊛	\logof		

TABLE 94: txfonts/pxfonts Binary Relations

⦸	\circledgtr	⋉	\lJoin	×	\opentimes
⦵	\circledless	⋈	\lrtimes	⫫	\Perp
:≈	\colonapprox	⊸	\multimap	⪷	\preceqq
::≈	\Colonapprox	⊶	\multimapboth	⪹	\precneqq
:−	\coloneq	⧟	\multimapbothvert	⋊	\rJoin
::−	\Coloneq	⊷	\multimapdot	⋐	\strictfi
::=	\Coloneqq	⧿	\multimapdotboth	⋑	\strictif
:=	\coloneqq*	⊶	\multimapdotbothA	⋒	\strictiff
::∼	\Colonsim	⧟	\multimapdotbothAvert	⪸	\succeqq
:∼	\colonsim	⊷	\multimapdotbothB	⪺	\succneqq
−::	\Eqcolon	⧿	\multimapdotbothBvert	//	\varparallel
−:	\eqcolon	⧟	\multimapdotbothvert	\\	\varparallelinv
=:	\eqqcolon	⊷	\multimapdotinv	⫦	\VvDash
=::	\Eqqcolon	⊸	\multimapinv		
≂	\eqsim	⤫	\openJoin		

* As an alternative to using txfonts/pxfonts, a ":=" symbol can be constructed with "\mathrel{\mathop:}=".

TABLE 95: txfonts/pxfonts Negated Binary Relations

≉	\napproxeq	⪻	\npreccurlyeq	≉	\nthickapprox
≁	\nasymp	⪵	\npreceqq	↞	\ntwoheadleftarrow
≴	\nbacksim	⋨	\nprecsim	↠	\ntwoheadrightarrow
≠	\nbacksimeq	≠	\nsimeq	∦	\nvarparallel
≠	\nbumpeq	⪸	\nsuccapprox	⫲	\nvarparallelinv
≠	\nBumpeq	⪼	\nsucccurlyeq	⊮	\nVdash
≢	\nequiv	⪺	\nsucceqq		
≉	\nprecapprox	⋩	\nsuccsim		

TABLE 114: $\mathcal{AMS}$ Subset and Superset Relations

$\nsubseteq$	\nsubseteq	$\subseteqq$	\subseteqq	$\supsetneqq$	\supsetneqq
$\nsupseteq$	\nsupseteq	$\subsetneq$	\subsetneq	$\varsubsetneq$	\varsubsetneq
$\nsupseteqq$	\nsupseteqq	$\subsetneqq$	\subsetneqq	$\varsubsetneqq$	\varsubsetneqq
$\sqsubset$	\sqsubset	$\Supset$	\Supset	$\varsupsetneq$	\varsupsetneq
$\sqsupset$	\sqsupset	$\supseteqq$	\supseteqq	$\varsupsetneqq$	\varsupsetneqq
$\Subset$	\Subset	$\supsetneq$	\supsetneq		

TABLE 115: stmaryrd Subset and Superset Relations

$\subsetplus$	\subsetplus	$\supsetplus$	\supsetplus
$\subsetpluseq$	\subsetpluseq	$\supsetpluseq$	\supsetpluseq

TABLE 116: wasysym Subset and Superset Relations

$\sqsubset$	\sqsubset	$\sqsupset$	\sqsupset

TABLE 117: txfonts/pxfonts Subset and Superset Relations

$\nsqsubset$	\nsqsubset	$\nsqsupseteq$	\nsqsupseteq	$\nSupset$	\nSupset
$\nsqsubseteq$	\nsqsubseteq	$\nSubset$	\nSubset		
$\nsqsupset$	\nsqsupset	$\subsetneqq$	\nsubseteqq		

TABLE 118: mathabx Subset and Superset Relations

$\nsqsubset$	\nsqsubset	$\nsupset$	\nsupset	$\sqsupseteq$	\sqsupseteq	$\supseteq$	\supseteq
$\nsqSubset$	\nsqSubset	$\nSupset$	\nSupset	$\sqsupseteqq$	\sqsupseteqq	$\supseteqq$	\supseteqq
$\nsqsubseteq$	\nsqsubseteq	$\nsupseteq$	\nsupseteq	$\sqsupsetneq$	\sqsupsetneq	$\supsetneq$	\supsetneq
$\nsqsubseteqq$	\nsqsubseteqq	$\nsupseteqq$	\nsupseteqq	$\sqsupsetneqq$	\sqsupsetneqq	$\supsetneqq$	\supsetneqq
$\nsqsupset$	\nsqsupset	$\sqsubset$	\sqsubset	$\subset$	\subset	$\varsqsubsetneq$	\varsqsubsetneq
$\nsqSupset$	\nsqSupset	$\sqSubset$	\sqSubset	$\Subset$	\Subset	$\varsqsubsetneqq$	\varsqsubsetneqq
$\nsqsupseteq$	\nsqsupseteq	$\sqsubseteq$	\sqsubseteq	$\subseteq$	\subseteq	$\varsqsupsetneq$	\varsqsupsetneq
$\nsqsupseteqq$	\nsqsupseteqq	$\sqsubseteqq$	\sqsubseteqq	$\subseteqq$	\subseteqq	$\varsqsupsetneqq$	\varsqsupsetneqq
$\nsubset$	\nsubset	$\sqsubsetneq$	\sqsubsetneq	$\subsetneq$	\subsetneq	$\varsubsetneq$	\varsubsetneq
$\nSubset$	\nSubset	$\sqsubsetneqq$	\sqsubsetneqq	$\subsetneqq$	\subsetneqq	$\varsubsetneqq$	\varsubsetneqq
$\nsubseteq$	\nsubseteq	$\sqSupset$	\sqSupset	$\supset$	\supset	$\varsupsetneq$	\varsupsetneq
$\nsubseteqq$	\nsubseteqq	$\sqsupset$	\sqsupset	$\Supset$	\Supset	$\varsupsetneqq$	\varsupsetneqq

Table 122: stix Subset and Superset Relations

⊂	\bsolhsub	⊑	\sqsupseteq	⊃⊂	\suphsub
⊏	\csub	⋣	\sqsupsetneq	⥉	\suplarr
⊑	\csube	⫏	\subedot	⫄	\supmult
⊐	\csup	⫃	\submult	⫗	\Supset
⊒	\csupe	⥹	\subrarr	⊃	\supset
⥊	\leftarrowsubset	⫇	\Subset	⫌	\supsetapprox
⊄	\nsqsubset	⊂	\subset	⫀	\supsetcirc*
⋢	\nsqsubseteq	⫈	\subsetapprox	⫂	\supsetdot
⊅	\nsqsupset	⫀	\subsetcirc*	⊇	\supseteq
⋣	\nsqsupseteq	⫂	\subsetdot	⫆	\supseteqq
⊄	\nsubset	⊆	\subseteq	⫌	\supsetneq
⊈	\nsubseteq	⫅	\subseteqq	⫋	\supsetneqq
⫋	\nsubseteqq	⫋	\subsetneq	⫀	\supsetplus
⊅	\nsupset	⫋	\subsetneqq	⫷	\supsim
⊉	\nsupseteq	⫀	\subsetplus	⫔	\supsub
⫋	\nsupseteqq	⫷	\subsim	⫓	\supsup
⇻	\rightarrowsupset	⫑	\subsub	⫋	\varsubsetneq
⊏	\sqsubset	⫓	\subsup	⫋	\varsubsetneqq
⊑	\sqsubseteq	⫘	\supdsub	⫌	\varsupsetneq
⋤	\sqsubsetneq	⫄	\supedot	⫌	\varsupsetneqq
⊐	\sqsupset	⟃	\suphsol		

* Defined as an ordinary character, not as a binary relation.

Table 123: Inequalities

≥	\geq	≫	\gg	≤	\leq	≪	\ll	≠	\neq

Table 124: $\mathcal{AMS}$ Inequalities

⩾	\eqslantgtr	⪀	\gtrdot	⋚	\lesseqgtr	≱	\ngeq
⩽	\eqslantless	≷	\gtreqless	⪋	\lesseqqgtr	≱	\ngeqq
≧	\geqq	≷	\gtreqqless	≶	\lessgtr	⋡	\ngeqslant
⩾	\geqslant	≳	\gtrless	≲	\lesssim	⊁	\ngtr
⋙	\ggg	≳	\gtrsim	⋘	\lll	≰	\nleq
⪈	\gnapprox	≩	\gvertneqq	⪅	\lnapprox	≰	\nleqq
⪈	\gneq	≦	\leqq	⪇	\lneq	⋠	\nleqslant
≩	\gneqq	⩽	\leqslant	≨	\lneqq	⊀	\nless
⋧	\gnsim	⪇	\lessapprox	⋦	\lnsim		
⪆	\gtrapprox	⩿	\lessdot	≨	\lvertneqq		

(continued from previous page)

⩖	\gesles	⪿	\lesdoto	≰	\nleq
≫	\gg	⪾	\lesdotor	≦̸	\nleqq
⋙	\ggg	⪔	\lesges	⩽̸	\nleqslant
⋙	\gggnest	≲	\lessapprox	≮	\nless
×	\gla	⋖	\lessdot	≸	\nlessgtr
≧	\glE	≦	\lesseqgtr	≴	\nlesssim
⪤	\glj	≦	\lesseqqgtr	⋘̸	\nll
≳	\gnapprox	≶	\lessgtr	⩋	\partialmeetcontraction
≥	\gneq	≲	\lesssim	↣	\rightarrowgtr
≧	\gneqq	≧	\lgE	≅	\simgE
≳	\gnsim	≪	\ll	≳	\simgtr
≥	\gsime	⋘	\lll	≅	\simlE
⋛	\gsiml	⋘	\lllnest	≲	\simless
⪢	\Gt	≉	\lnapprox	⩽	\smt
▷	\gtcc	≨	\lneq	⩽	\smte
⩺	\gtcir	≨	\lneqq		

stix defines \le as a synonym for \leq, \ge as a synonym for \geq, \llless as a synonym for \lll, \gggtr as a synonym for \ggg, \nle as a synonym for \nleq, and \nge as a synonym for \ngeq.

TABLE 132: $\mathcal{AMS}$ Triangle Relations

◀	\blacktriangleleft	⋫	\ntriangleright	⊵	\trianglerighteq
▶	\blacktriangleright	⋭	\ntrianglerighteq	◁	\vartriangleleft
⋪	\ntriangleleft	⊴	\triangleleft	▷	\vartriangleright
⋬	\ntriangleleft	≜	\triangleq		

TABLE 133: stmaryrd Triangle Relations

⧏	\trianglelefteqslant	⧐	\trianglerighteqslant
⧏̸	\ntrianglelefteqslant	⧐̸	\ntrianglerighteqslant

TABLE 134: mathabx Triangle Relations

⋪	\ntriangleleft	◁	\triangleleft	◁	\vartriangleleft
⋬	\ntrianglelefteq	⩤	\trianglelefteq	▷	\vartriangleright
⋫	\ntriangleright	▷	\triangleright		
⋭	\ntrianglerighteq	⩥	\trianglerighteq		

TABLE 139: Arrows

⇓	\Downarrow	⟵	\longleftarrow	↖	\nwarrow
↓	\downarrow	⟸	\Longleftarrow	⇒	\Rightarrow
↩	\hookleftarrow	⟷	\longleftrightarrow	→	\rightarrow
↪	\hookrightarrow	⟺	\Longleftrightarrow	↘	\searrow
⇝	\leadsto*	⟼	\longmapsto	↙	\swarrow
←	\leftarrow	⟹	\Longrightarrow	↑	\uparrow
⇐	\Leftarrow	⟶	\longrightarrow	⇑	\Uparrow
⇔	\Leftrightarrow	↦	\mapsto	↕	\updownarrow
↔	\leftrightarrow	↗	\nearrow†	⇕	\Updownarrow

* Not predefined by the LaTeX 2_ε core. Use the latexsym package to expose this symbol.

† See the note beneath Table 246 for information about how to put a diagonal arrow across a mathematical expression (as in "$\not\nearrow \vec{B}^{0}$") .

TABLE 140: Harpoons

↽	\leftharpoondown	⇁	\rightharpoondown	⇌	\rightleftharpoons
↼	\leftharpoonup	⇀	\rightharpoonup		

TABLE 141: textcomp Text-mode Arrows

↓	\textdownarrow	→	\textrightarrow
←	\textleftarrow	↑	\textuparrow

TABLE 142: $\mathcal{AMS}$ Arrows

↺	\circlearrowleft	⇇	\leftleftarrows	⇄	\rightleftarrows
↻	\circlearrowright	⇆	\leftrightarrows	⇉	\rightrightarrows
↶	\curvearrowleft	↭	\leftrightsquigarrow	⇝	\rightsquigarrow
↷	\curvearrowright	⇚	\Lleftarrow	↱	\Rsh
⇠	\dashleftarrow	↫	\looparrowleft	↞	\twoheadleftarrow
⇢	\dashrightarrow	↬	\looparrowright	↠	\twoheadrightarrow
⇊	\downdownarrows	↰	\Lsh	⇈	\upuparrows
↢	\leftarrowtail	↣	\rightarrowtail		

TABLE 143: $\mathcal{AMS}$ Negated Arrows

⇍	\nLeftarrow	⇎	\nLeftrightarrow	⇏	\nRightarrow
↚	\nleftarrow	↮	\nleftrightarrow	↛	\nrightarrow

TABLE 144: $\mathcal{AMS}$ Harpoons

⇃	\downharpoonleft	⇋	\leftrightharpoons	↿	\upharpoonleft
⇂	\downharpoonright	⇌	\rightleftharpoons	↾	\upharpoonright

Table 181: mathabx Extension Characters

↦	\mapsfromchar	↦	\mapstochar
⤇	\Mapsfromchar	⤇	\Mapstochar

Table 182: stix Extension Characters

↼	\lhook	-	\relbar	≣	\RRelbar
↤	\mapsfromchar	=	\Relbar	≣	\Rrelbar
↦	\mapstochar	⇀	\rhook		

Table 183: Log-like Symbols

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

Calling the above "symbols" may be a bit misleading.[3] Each log-like symbol merely produces the eponymous textual equivalent, but with proper surrounding spacing. See Section 10.4 for more information about log-like symbols. As \bmod and \pmod are arguably not symbols we refer the reader to the Short Math Guide for LaTeX [Dow00] for samples.

Table 184: $\mathcal{AMS}$ Log-like Symbols

inj lim	\injlim	$\varinjlim$	\varinjlim	$\varlimsup$	\varlimsup
proj lim	\projlim	$\varliminf$	\varliminf	$\varprojlim$	\varprojlim

Load the amsmath package to get these symbols. See Section 10.4 for some additional comments regarding log-like symbols. As \mod and \pod are arguably not symbols we refer the reader to the Short Math Guide for LaTeX [Dow00] for samples.

[3] Michael J. Downes prefers the more general term, "atomic math objects".

Table 188: Greek Letters

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

The remaining Greek majuscules can be produced with ordinary Latin letters. The symbol "M", for instance, is used for both an uppercase "m" and an uppercase "μ". To make available commands for *all* of the Greek majuscules, either use the mathspec package, which requires XeLaTeX, or copy `mathspec.sty`'s Greek-letter definitions to your document's preamble:

```
\DeclareMathSymbol{\Alpha}{\mathalpha}{operators}{"41}
\DeclareMathSymbol{\Beta}{\mathalpha}{operators}{"42}
\DeclareMathSymbol{\Epsilon}{\mathalpha}{operators}{"45}
\DeclareMathSymbol{\Zeta}{\mathalpha}{operators}{"5A}
\DeclareMathSymbol{\Eta}{\mathalpha}{operators}{"48}
\DeclareMathSymbol{\Iota}{\mathalpha}{operators}{"49}
\DeclareMathSymbol{\Kappa}{\mathalpha}{operators}{"4B}
\DeclareMathSymbol{\Mu}{\mathalpha}{operators}{"4D}
\DeclareMathSymbol{\Nu}{\mathalpha}{operators}{"4E}
\DeclareMathSymbol{\Omicron}{\mathalpha}{operators}{"4F}
\DeclareMathSymbol{\Rho}{\mathalpha}{operators}{"50}
\DeclareMathSymbol{\Tau}{\mathalpha}{operators}{"54}
\DeclareMathSymbol{\Chi}{\mathalpha}{operators}{"58}
\DeclareMathSymbol{\omicron}{\mathord}{letters}{"6F}
```

See Section 10.5 for examples of how to produce bold Greek letters.

The symbols in this table are intended to be used in mathematical typesetting. Greek body text can be typeset using the babel package's greek (or polutonikogreek) option—and, of course, a font that provides the glyphs for the Greek alphabet.

Table 189: $\mathcal{AMS}$ Greek Letters

$\digamma$	\digamma	$\varkappa$	\varkappa

Table 193: txfonts/pxfonts Variant Latin Letters

g	\varg	v	\varv	w	\varw	y	\vary

Pass the varg option to txfonts/pxfonts to replace g, v, w, and y with g, v, w, and y in every mathematical expression in your document.

Table 194: boisik Variant Greek Letters

β	\varbeta	$\varkappa$	\varkappa	ϖ	\varpi	ς	\varsigma
ε	\varepsilon	φ	\varphi	ϱ	\varrho	ϑ	\vartheta

Table 195: boisik Variant Latin Letters

g	\varg

Table 196: stix Variant Greek Letters

ε	\varepsilon	φ	\varphi	ϱ	\varrho	ϑ	\vartheta
$\varkappa$	\varkappa	ϖ	\varpi	ς	\varsigma		

Table 197: stix Transformed Greek Letters

$\ni$	\backepsilon	$\reflectbox{\rotatebox[origin=c]{180}{\textiota}}$	\turnediota
$\mho$	\mho	$\ni$	\upbackepsilon

Table 198: $\mathcal{AMS}$ Hebrew Letters

ב	\beth	ג	\gimel	ד	\daleth

\aleph (א) appears in Table 302 on page 118.

Table 199: MnSymbol Hebrew Letters

א	\aleph	ב	\beth	ג	\gimel	ד	\daleth

Table 200: fdsymbol Hebrew Letters

א	\aleph	ב	\beth	ג	\gimel	ד	\daleth

Table 201: boisik Hebrew Letters

ב	\beth	ג	\gimel	ד	\daleth

Table 214: fourier Letter-like Symbols

∂	\partial	$\varpartialdiff$	\varpartialdiff

Table 215: cmll Letter-like Symbols

⅋	\Bot	⊥	\simbot

Table 216: $\mathcal{AMS}$ Delimiters

⌜	\ulcorner	⌝	\urcorner
⌞	\llcorner	⌟	\lrcorner

Table 217: stmaryrd Delimiters

⦉	\Lbag	⦊	\Rbag	⦉	\lbag	⦊	\rbag
⌈⌈	\llceil	⌉⌉	\rrceil	⌊⌊	\llfloor	⌋⌋	\rrfloor
⦇	\llparenthesis	⦈	\rrparenthesis				

Table 218: mathabx Delimiters

⌜ ⌞	\lcorners	⌝ ⌟	\rcorners
⌜	\ulcorner	⌝	\urcorner
⌞	\llcorner	⌟	\lrcorner

Table 219: boisik Delimiters

⌜	\ulcorner	⌝	\urcorner
⌞	\llcorner	⌟	\lrcorner

Table 220: stix Delimiters

⦑	\langledot	⦒	\rangledot	⦇	\llangle	⦈	\rrangle
⦉	\lbag	⦊	\rbag	⌞	\llcorner	⌟	\lrcorner
⦅	\lblkbrbrak	⦆	\rblkbrbrak	⦇	\llparenthesis	⦈	\rrparenthesis
⦋	\lbracklltick	⦌	\rbrackurtick	⦓	\Lparengtr	⦔	\Rparenless
⦋	\lbrackubar	⦌	\rbrackubar	⦓	\lparenless	⦔	\rparengtr
⦍	\lbrackultick	⦎	\rbracklrtick	⦙	\lvzigzag	⦚	\rvzigzag
⦇	\Lbrbrak	⦈	\Rbrbrak	⦙	\Lvzigzag	⦚	\Rvzigzag
⦑	\lcurvyangle	⦒	\rcurvyangle	⌜	\ulcorner	⌝	\urcorner

Table 221: nath Delimiters

⌞	\niv	⌟	\vin

TABLE 222: Variable-sized Delimiters

↓	⏐	\downarrow	⇓	‖	\Downarrow	[	⎡	[	]	⎤	]
⟨	⟨	\langle	⟩	⟩	\rangle	|	⏐	|	‖	‖	\\|
⌈	⎡	\lceil	⌉	⎤	\rceil	↑	⏐	\uparrow	⇑	‖	\Uparrow
⌊	⎢	\lfloor	⌋	⎥	\rfloor	↕	⏐	\updownarrow	⇕	‖	\Updownarrow
(	⎛	(	)	⎞	)	{	⎧	\{	}	⎫	\}
/	⧸	/	\	⧹	\backslash						

When used with `\left` and `\right`, these symbols expand to the height of the enclosed math expression. Note that `\vert` is a synonym for `|`, and `\Vert` is a synonym for `\|`.

ε-TEX provides a `\middle` analogue to `\left` and `\right`. `\middle` can be used, for example, to make an internal "|" expand to the height of the surrounding `\left` and `\right` symbols. (This capability is commonly needed when typesetting adjacent bras and kets in Dirac notation: "$\langle\phi|\psi\rangle$"). A similar effect can be achieved in conventional LATEX using the braket package.

TABLE 223: Large, Variable-sized Delimiters

∫	⌠	\lmoustache	)	⌡	\rmoustache	(	⎛	\lgroup	)	⎞	\rgroup
⏐	⏐	\arrowvert	‖	‖	\Arrowvert	❙	❙	\bracevert			

These symbols *must* be used with `\left` and `\right`. The mathabx package, however, redefines `\lgroup` and `\rgroup` so that those symbols can work without `\left` and `\right`.

TABLE 224: $\mathcal{AMS}$ Variable-sized Delimiters

|	⏐	\lvert	|	⏐	\rvert
‖	‖	\lVert	‖	‖	\rVert

According to the amsmath documentation [AMS99], the preceding symbols are intended to be used as delimiters (e.g., as in "$|-z|$") while the `\vert` and `\Vert` symbols (Table 222) are intended to be used as operators (e.g., as in "$p|q$").

TABLE 225: stmaryrd Variable-sized Delimiters

⟦	⟦	\llbracket	⟧	⟧	\rrbracket

TABLE 235: metre Text-mode Delimiters

}	\alad	}	\Alad	†	\crux	†	\Crux
{	\alas	{	\Alas	‖	\quadrad	‖	\Quadrad
⟩	\angud	⟩	\Angud	⟦	\quadras	⟦	\Quadras
⟨	\angus	⟨	\Angus				

TABLE 236: Math-mode Accents

$\acute{a}$	\acute{a}	$\check{a}$	\check{a}	$\grave{a}$	\grave{a}	$\tilde{a}$	\tilde{a}
$\bar{a}$	\bar{a}*	$\ddot{a}$	\ddot{a}	$\hat{a}$	\hat{a}	$\vec{a}$	\vec{a}
$\breve{a}$	\breve{a}	$\dot{a}$	\dot{a}	$\mathring{a}$	\mathring{a}		

Note also the existence of \imath and \jmath, which produce dotless versions of "i" and "j". (See Table 302 on page 118.) These are useful when the accent is supposed to replace the dot. For example, "\hat{\imath}" produces a correct "$\hat{\imath}$", while "\hat{i}" would yield the rather odd-looking "$\hat{i}$".

* The \overline command (Table 246 on page 107) produces a wider accent than \bar: "$\overline{A}$" vs. "$\bar{A}$". However, unlike adjacent \bars, adjacent \overlines run together, which is often not desired: "$\overline{AB}$" vs. "$\bar{A}\bar{B}$". If wider bars than \bar are needed, the following code from Enrico Gregorio can be used to add the requisite inter-symbol spacing [Gre09]:

```
\newcommand{\closure}[2][3]{%
  {}\mkern#1mu\overline{\mkern-#1mu#2}}
```

With that definition, "\closure{A}\closure{B}" produces "$\overline{A}\overline{B}$", with a visible gap between the two accents. The optional argument can be used to fine-tune the spacing.

TABLE 237: $\mathcal{AMS}$ Math-mode Accents

$\dddot{a}$	\dddot{a}	$\ddddot{a}$	\ddddot{a}

These accents are also provided by the mathabx and accents packages and are redefined by the mathdots package if the amsmath and amssymb packages have previously been loaded. All of the variations except for the original $\mathcal{AMS}$ ones tighten the space between the dots (from $\dddot{a}$ to $\ddddot{a}$). The mathabx and mathdots versions also function properly within subscripts and superscripts ($x^{\ddddot{a}}$ instead of $x^{\dddot{a}}$) .

TABLE 238: MnSymbol Math-mode Accents

$\vec{a}$	\vec{a}

Table 248: yhmath Extensible Accents

$\widehat{abc}$	`\widehat{abc}`	$\widetilde{abc}$	`\widetilde{abc}`
$\wideparen{abc}$	`\wideparen{abc}`	$\widehat{\widehat{abc}}$	`\widetriangle{abc}`
$\mathring{\frown}{abc}$	`\widering{abc}`		

Table 249: $\mathcal{AMS}$ Extensible Accents

$\overleftrightarrow{abc}$	`\overleftrightarrow{abc}`	$\underleftrightarrow{abc}$	`\underleftrightarrow{abc}`
$\underleftarrow{abc}$	`\underleftarrow{abc}`	$\underrightarrow{abc}$	`\underrightarrow{abc}`

Table 250: MnSymbol Extensible Accents

$\overbrace{abc}$	`\overbrace{abc}`	$\underbrace{abc}$	`\underbrace{abc}`
$\overgroup{abc}$	`\overgroup{abc}`	$\underlinesegment{abc}$	`\underlinesegment{abc}`
$\overleftharpoon{abc}$	`\overleftharpoon{abc}`	$\widehat{abc}$	`\widehat{abc}`
$\overlinesegment{abc}$	`\overlinesegment{abc}`	$\wideparen{abc}$	`\wideparen{abc}`
$\overrightharpoon{abc}$	`\overrightharpoon{abc}`	$\widetilde{abc}$	`\widetilde{abc}`
$\underbrace{abc}$	`\underbrace{abc}`		

Table 251: fdsymbol Extensible Accents

$\overbrace{abc}$	`\overbrace{abc}`	$\underbrace{abc}$	`\undergroup{abc}`
$\overgroup{abc}$	`\overgroup{abc}`	$\underlinesegment{abc}$	`\underlinesegment{abc}`
$\overleftharpoon{abc}$	`\overleftharpoon{abc}`	$\widehat{abc}$	`\widehat{abc}`
$\overlinesegment{abc}$	`\overlinesegment{abc}`	$\wideparen{abc}$	`\wideparen{abc}`
$\overrightharpoon{abc}$	`\overrightharpoon{abc}`	$\widetilde{abc}$	`\widetilde{abc}`
$\underbrace{abc}$	`\underbrace{abc}`		

TABLE 261: actuarialangle Extensible Accents

$\overline{abc|}$ `\actuarialangle{abc}`

The actuarialangle package additionally defines `\angl` as `\actuarialangle` with a small amount of extra space to the right of the accented expression under the ¬, `\angln` as `\angl{n}`, and `\anglr` as `\angl{r}`.

TABLE 262: $\mathcal{AMS}$ Extensible Arrows

$\xleftarrow{abc}$ `\xleftarrow{abc}` $\xrightarrow{abc}$ `\xrightarrow{abc}`

TABLE 263: mathtools Extensible Arrows

$\xhookleftarrow{abc}$ `\xhookleftarrow{abc}`
$\xhookrightarrow{abc}$ `\xhookrightarrow{abc}`
$\xLeftarrow{abc}$ `\xLeftarrow{abc}`
$\xleftharpoondown{abc}$ `\xleftharpoondown{abc}`
$\xleftharpoonup{abc}$ `\xleftharpoonup{abc}`
$\xleftrightarrow{abc}$ `\xleftrightarrow{abc}`
$\xLeftrightarrow{abc}$ `\xLeftrightarrow{abc}`
$\xleftrightharpoons{abc}$ `\xleftrightharpoons{abc}`
$\xmapsto{abc}$ `\xmapsto{abc}`
$\xRightarrow{abc}$ `\xRightarrow{abc}`
$\xrightharpoondown{abc}$ `\xrightharpoondown{abc}`
$\xrightharpoonup{abc}$ `\xrightharpoonup{abc}`
$\xrightleftharpoons{abc}$ `\xrightleftharpoons{abc}`

TABLE 264: chemarr Extensible Arrows

$\xrightleftharpoons{abc}$ `\xrightleftharpoons{abc}`

TABLE 265: chemarrow Extensible Arrows

$\xleftarrow[def]{abc}$ `\autoleftarrow{abc}{def}`
$\xrightarrow[def]{abc}$ `\autorightarrow{abc}{def}`
$\xleftrightharpoons[def]{abc}$ `\autoleftrightharpoons{abc}{def}`
$\xrightleftharpoons[def]{abc}$ `\autorightleftharpoons{abc}{def}`

In addition to the symbols shown above, chemarrow also provides `\larrowfill`, `\rarrowfill`, `\leftrightharpoonsfill`, and `\rightleftharpoonsfill` macros. Each of these takes a length argument and produces an arrow of the specified length.

TABLE 274: halloweenmath Extensible Ghosts

	`\overleftswishingghost{abc}`		`\overrightswishingghost{abc}`
	`\underleftswishingghost{abc}`		`\underrightswishingghost{abc}`
	`\xleftswishingghost{abc}`		`\xrightswishingghost{abc}`

TABLE 275: halloweenmath Extensible Bats

	`\overleftflutteringbat{abc}`		`\overrightflutteringbat{abc}`
	`\underleftflutteringbat{abc}`		`\underrightflutteringbat{abc}`
	`\xleftflutteringbat{abc}`		`\xrightflutteringbat{abc}`

TABLE 276: holtpolt Non-commutative Division Symbols

	`\holter{abc}{def}`		`\polter{abc}{def}`

TABLE 277: Dots

$\cdotp$	`\cdotp`	:	`\colon`*	.	`\ldotp`	$\vdots$	`\vdots`†
$\cdots$	`\cdots`	$\ddots$	`\ddots`†	...	`\ldots`		

* While ":" is valid in math mode, `\colon` uses different surrounding spacing. See Section 10.4 and the Short Math Guide for LaTeX [Dow00] for more information on math-mode spacing.

† The mathdots package redefines `\ddots` and `\vdots` (Table 283) to make them scale properly with font size. (They normally scale horizontally but not vertically.) `\fixedddots` and `\fixedvdots` provide the original, fixed-height functionality of LaTeX 2$_\varepsilon$'s `\ddots` and `\vdots` macros.

TABLE 278: $\mathcal{AMS}$ Dots

$\because$	`\because`*	$\cdots$	`\dotsi`	$\therefore$	`\therefore`*
$\cdots$	`\dotsb`	$\cdots$	`\dotsm`		
...	`\dotsc`	...	`\dotso`		

* `\because` and `\therefore` are defined as binary relations and therefore also appear in Table 90 on page 50.

The $\mathcal{AMS}$ `\dots_` symbols are named according to their intended usage: `\dotsb` between pairs of binary operators/relations, `\dotsc` between pairs of commas, `\dotsi` between pairs of integrals, `\dotsm` between pairs of multiplication signs, and `\dotso` between other symbol pairs.

TABLE 290: marvosym Digits

0	\MVZero	2	\MVTwo	4	\MVFour	6	\MVSix	8	\MVEight
1	\MVOne	3	\MVThree	5	\MVFive	7	\MVSeven	9	\MVNine

TABLE 291: fge Digits

0	\fgestruckzero	1	\fgestruckone

TABLE 292: dozenal Base-12 Digits

↊	\x	↋	\e

TABLE 293: mathabx Mayan Digits

𝍠	\maya{0}	𝍡	\maya{2}	𝍢	\maya{4}
𝍣	\maya{1}	𝍤	\maya{3}	𝍥	\maya{5}

TABLE 294: stix Infinities

⊛	\acidfree	∞	\infty	⧜	\tieinfty
⧞	\iinfin	⧝	\nvinfty		

TABLE 295: stix Primes

′	\prime	‵	\backprime
″	\dprime	‶	\backdprime
‴	\trprime	‷	\backtrprime
⁗	\qprime		

TABLE 296: stix Empty Sets

∅	\emptyset	⦱	\emptysetobar	∅	\varnothing
⦲	\emptysetoarr	⦳	\emptysetocirc		
⦴	\emptysetoarrl	⦸	\revemptyset		

TABLE 297: $\mathcal{AMS}$ Angles

∠	\angle	∡	\measuredangle	◁	\sphericalangle

TABLE 298: MnSymbol Angles

∠	\angle	∡	\measuredangle	◁	\sphericalangle

TABLE 303: Miscellaneous $\mathcal{AMS}$ Math Symbols

‵	\backprime	▼	\blacktriangledown	℧	\mho
★	\bigstar	╲	\diagdown	□	\square
⧫	\blacklozenge	╱	\diagup	▽	\triangledown
■	\blacksquare	ð	\eth	∅	\varnothing
▲	\blacktriangle	◊	\lozenge	△	\vartriangle

TABLE 304: Miscellaneous wasysym Math Symbols

□	\Box	◇	\Diamond	℧	\mho*	∢	\varangle

* wasysym also defines an \agemO symbol, which is the same glyph as \mho but is intended for use in text mode.

TABLE 305: Miscellaneous txfonts/pxfonts Math Symbols

◆	\Diamondblack	ƛ	\lambdabar
⟐	\Diamonddot	ƛ	\lambdaslash

TABLE 306: Miscellaneous mathabx Math Symbols

○	\degree	⁗	\fourth	∡	\measuredangle	″	\second
╲	\diagdown	#	\hash	⋔	\pitchfork	⦟	\sphericalangle
╱	\diagup	∞	\infty	∝	\propto	‴	\third
∅	\diameter	⋉	\leftthreetimes	⋋	\rightthreetimes	#	\varhash

TABLE 307: Miscellaneous MnSymbol Math Symbols

⌐	\backneg	∅	\diameter	¬	\invneg	¬	\neg
‵	\backprime	∞	\infty	✠	\maltese	′	\prime
✓	\checkmark	⌙	\invbackneg	∇	\nabla	∫	\smallint

MnSymbol defines \emptyset and \varnothing as synonyms for \diameter; \lnot and \minushookdown as synonyms for \neg; \minushookup as a synonym for \invneg; \hookdownminus as a synonym for \backneg; and, \hookupminus as a synonym for \invbackneg.