The Comprehensive LaTeX Symbol List

Scott Pakin* David Carlisle Alexander Holt

March 14, 2001

Abstract

This document lists 2013 symbols and the corresponding LaTeX commands that produce them. Some of these symbols are guaranteed to be available in every LaTeX 2_ε system; others require fonts and packages that may not accompany a given distribution and that therefore need to be installed. All of the fonts and packages used to prepare this document—as well as this document itself—are freely available from the Comprehensive TeX Archive Network (`http://www.ctan.org`).

Contents

1 Body-text symbols **4**
Table 1: LaTeX 2_ε Escapable "Special" Characters . . . 4
Table 2: LaTeX 2_ε Commands Defined to Work in Both Math and Text Mode . . . 4
Table 3: Non-ASCII Letters (Excluding Accented Letters) . . . 4
Table 4: Predefined LaTeX 2_ε Text-Mode Commands . . . 4
Table 5: Punctuation Marks Not Found in OT1 . . . 5
Table 6: Text-Mode Accents . . . 5
Table 7: tipa Text-Mode Accents . . . 5
Table 8: textcomp Symbols . . . 6
Table 9: wasysym Phonetic Symbols . . . 8
Table 10: tipa Phonetic Symbols . . . 8
Table 11: marvosym Currency Symbols . . . 9

2 Mathematical symbols **10**
Table 12: Binary Operators . . . 10
Table 13: Relation Symbols . . . 10
Table 14: Punctuation Symbols (Math Mode) . . . 10
Table 15: Arrow Symbols . . . 11
Table 16: Miscellaneous LaTeX 2_ε Symbols . . . 11
Table 17: Variable-sized Math Operators . . . 11
Table 18: Log-like Symbols . . . 12
Table 19: Variable-sized Delimiters . . . 12
Table 20: Large, Variable-sized Delimiters . . . 12
Table 21: Math-Mode Accents . . . 12
Table 22: Some Other Constructions . . . 13
Table 23: Greek Letters . . . 13
Table 24: AMS Delimiters . . . 13
Table 25: AMS Arrows . . . 13
Table 26: AMS Negated Arrows . . . 13
Table 27: AMS Greek . . . 14
Table 28: AMS Hebrew . . . 14
Table 29: AMS Log-like Symbols . . . 14
Table 30: Miscellaneous AMS Symbols . . . 14
Table 31: AMS Commands Defined to Work in Both Math and Text Mode . . . 14
Table 32: AMS Binary Operators . . . 14

*Scott Pakin `<pakin@uiuc.edu>` is currently the contact person for this document.

Table 33: AMS Binary Relations . . . 15
Table 34: AMS Negated Binary Relations . . . 15
Table 35: stmaryrd Delimiters . . . 15
Table 36: stmaryrd Arrows . . . 16
Table 37: stmaryrd Extension Characters . . . 16
Table 38: stmaryrd Binary Operators . . . 16
Table 39: Variable-sized stmaryrd Math Operators . . . 16
Table 40: stmaryrd Binary Relations . . . 16
Table 41: stmaryrd Negated Binary Relations . . . 17
Table 42: Variable-sized wasysym Math Operators . . . 17
Table 43: Other wasysym Math-Mode Symbols . . . 17
Table 44: txfonts/pxfonts Binary Operators . . . 17
Table 45: txfonts/pxfonts Binary Relations . . . 17
Table 46: txfonts/pxfonts Upright Greek Letters . . . 18
Table 47: txfonts/pxfonts Variant Latin Letters . . . 18
Table 48: Variable-sized txfonts/pxfonts Math Operators . . . 19
Table 49: Miscellaneous txfonts/pxfonts Symbols . . . 19
Table 50: marvosym Math Symbols . . . 19
Table 51: ar Aspect Ratio Symbol . . . 19
Table 52: ulsy Contradiction and Other Symbols . . . 19
Table 53: Math Alphabets . . . 20

3 Science and technology symbols **21**
Table 54: wasysym Electrical and Physical Symbols . . . 21
Table 55: wasysym Astronomical Symbols . . . 21
Table 56: wasysym APL Symbols . . . 21
Table 57: wasysym APL Modifiers . . . 21
Table 58: marvosym Engineering Symbols . . . 21
Table 59: marvosym Biological Symbols . . . 21
Table 60: marvosym Astronomical Symbols . . . 22
Table 61: marvosym Astrological Symbols . . . 22
Table 62: marvosym Communication Symbols . . . 22
Table 63: marvosym Safety-Related Symbols . . . 22
Table 64: marvosym Computer Hardware Symbols . . . 22
Table 65: ifsym Pulse Diagram Symbols . . . 22

4 Other symbols **23**
Table 66: wasysym General Symbols . . . 23
Table 67: wasysym Polygons and Stars . . . 23
Table 68: wasysym Musical Notes . . . 23
Table 69: wasysym Circles . . . 23
Table 70: pifont Commands for Accessing Zapf Dingbats . . . 23
Table 71: marvosym Information Symbols . . . 24
Table 72: marvosym Navigation Symbols . . . 24
Table 73: marvosym Laundry Symbols . . . 25
Table 74: Other marvosym Symbols . . . 25
Table 75: manfnt Dangerous Bend Symbols . . . 25
Table 76: Other manfnt Symbols . . . 25
Table 77: bbding Scissors . . . 26
Table 78: bbding Hands . . . 26
Table 79: bbding Pencils and Nibs . . . 26
Table 80: bbding Crosses, Plusses, and Xs . . . 26
Table 81: bbding Stars, Flowers, Snowflakes, and Similar Shapes . . . 26
Table 82: bbding Geometric Shapes . . . 27
Table 83: Other bbding Symbols . . . 27
Table 84: ifsym Weather Symbols . . . 27
Table 85: ifsym Alpine Symbols . . . 27
Table 86: ifsym Clocks . . . 28

Table 87: ifsym Geometric Shapes 28
Table 88: Other ifsym Symbols 29

5 Additional Information **30**
5.1 Symbol Name Clashes 30
5.2 Where can I find the symbol for . . . ? 31
5.3 Math-mode spacing 32
5.4 ASCII quick reference 32
5.5 About this document 32

References **34**

Index **35**

1 Body-text symbols

This section lists symbols that are intended for use in running text, such as punctuation marks, accents, ligatures, and currency symbols.

Table 1: LaTeX 2_ε Escapable "Special" Characters

$	\$	%	\%	_	_	}	\}	&	\&	#	\#	{	\{

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

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

Where two symbols are present, the left one is the "faked" symbol that LaTeX 2_ε provides by default, and the right one is the "true" symbol that textcomp makes available.

Table 3: Non-ASCII Letters (Excluding Accented Letters)

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

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

Table 4: Predefined LaTeX 2_ε Text-Mode Commands

	ˆ	\textasciicircum		<	\textless
	˜	\textasciitilde	a	ª	\textordfeminine
	*	\textasteriskcentered	o	º	\textordmasculine
	\	\textbackslash		¶	\textparagraph
	|	\textbar		·	\textperiodcentered
	{	\textbraceleft		¿	\textquestiondown
	}	\textbraceright		“	\textquotedblleft
	•	\textbullet		”	\textquotedblright
©	©	\textcopyright		‘	\textquoteleft
	†	\textdagger		’	\textquoteright
	‡	\textdaggerdbl	®	®	\textregistered
	$	\textdollar		§	\textsection
	...	\textellipsis		£	\textsterling
	—	\textemdash	TM	™	\texttrademark
	–	\textendash		_	\textunderscore
	¡	\textexclamdown		␣	\textvisiblespace
	>	\textgreater			

Where two symbols are present, the left one is the "faked" symbol that LaTeX 2_ε provides by default, and the right one is the "true" symbol that textcomp makes available.

Table 5: Punctuation Marks Not Found in OT1

«	`\guillemotleft`	‹	`\guilsinglleft`	„	`\quotedblbase`	"	`\textquotedbl`
»	`\guillemotright`	›	`\guilsinglright`	‚	`\quotesinglbase`		

To get these symbols, use the fontenc package to select an alternate font encoding, such as T1.

Table 6: Text-Mode Accents

Ää	`\"{A}\"{a}`	Ârâ	`\^{A}\^{a}`	Ąą	`\d{A}\d{a}`	Âr̂â	`\t{A}\t{a}`
Áá	`\'{A}\'{a}`	Àà	`\‘{A}\‘{a}`	Ăă	`\H{A}\H{a}`	Ăă	`\u{A}\u{a}`
Ȧȧ	`\.{A}\.{a}`	Ḇḇ	`\b{A}\b{a}`	Ąą	`\k{A}\k{a}`†	Ăă	`\v{A}\v{a}`
Āā	`\={A}\={a}`	Ąą	`\c{A}\c{a}`	Åå	`\r{A}\r{a}`	Ãã	`\~{A}\~{a}`

Ârâ `\newtie{A}\newtie{a}`* Ⓐⓐ `\textcircled{A}\textcircled{a}`

* Requires the textcomp package.

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

Also note the existence of `\i` and `\j`, which produce dotless versions of "i" and "j" (viz., "ı" and "ȷ"). These are useful when the accent is supposed to replace the dot. For example, "`na\"{\i}ve`" produces a correct "naïve", while "`na\"{i}ve`" would yield the rather odd-looking "naïve". ("`na\"{i}ve`" *does* work in encodings other than OT1, however.)

Table 7: tipa Text-Mode Accents

Ǎǎ	`\textacutemacron{A}\textacutemacron{a}`
Ǎǎ	`\textacutewedge{A}\textacutewedge{a}`
Ąą	`\textadvancing{A}\textadvancing{a}`
Ąą	`\textbottomtiebar{A}\textbottomtiebar{a}`
Ăă	`\textbrevemacron{A}\textbrevemacron{a}`
Ăă	`\textcircumacute{A}\textcircumacute{a}`
Ȧȧ	`\textcircumdot{A}\textcircumdot{a}`
Ăă	`\textdotacute{A}\textdotacute{a}`
Ăă	`\textdotbreve{A}\textdotbreve{a}`
Ää	`\textdoublegrave{A}\textdoublegrave{a}`
Ää	`\textdoublevbaraccent{A}\textdoublevbaraccent{a}`
Ãã	`\textgravecircum{A}\textgravecircum{a}`
Äă	`\textgravedot{A}\textgravedot{a}`
Ăă	`\textgravemid{A}\textgravemid{a}`
Ąą	`\textinvsubbridge{A}\textinvsubbridge{a}`
Ąą	`\textlowering{A}\textlowering{a}`
Ăă	`\textmidacute{A}\textmidacute{a}`

(continued on next page)

(continued from previous page)

Ǎǎ	`\textovercross{A}\textovercross{a}`
Ä̆ä̆	`\textoverw{A}\textoverw{a}`
Ąą	`\textpolhook{A}\textpolhook{a}`
Aa	`\textraising{A}\textraising{a}`
Aa	`\textretracting{A}\textretracting{a}`
Å̄å̄	`\textringmacron{A}\textringmacron{a}`
Ââ	`\textroundcap{A}\textroundcap{a}`
Aa	`\textseagull{A}\textseagull{a}`
Aa	`\textsubarch{A}\textsubarch{a}`
Aa	`\textsubbar{A}\textsubbar{a}`
Aa	`\textsubbridge{A}\textsubbridge{a}`
Aa	`\textsubdot{A}\textsubdot{a}`
Aa	`\textsublhalfring{A}\textsublhalfring{a}`
Aa	`\textsubplus{A}\textsubplus{a}`
Aa	`\textsubrhalfring{A}\textsubrhalfring{a}`
Aa	`\textsubring{A}\textsubring{a}`
Aa	`\textsubsquare{A}\textsubsquare{a}`
Aa	`\textsubtilde{A}\textsubtilde{a}`
Aa	`\textsubumlaut{A}\textsubumlaut{a}`
Aa	`\textsubw{A}\textsubw{a}`
Aa	`\textsubwedge{A}\textsubwedge{a}`
~~Aa~~	`\textsuperimposetilde{A}\textsuperimposetilde{a}`
Aa	`\textsyllabic{A}\textsyllabic{a}`
Ȧ̃ȧ̃	`\texttildedot{A}\texttildedot{a}`
A͡a͡	`\texttoptiebar{A}\texttoptiebar{a}`
Ȧȧ	`\textvbaraccent{A}\textvbaraccent{a}`

tipa defines shortcut sequences for many of the above. See the tipa documentation for more information.

Table 8: textcomp Symbols

″	`\textacutedbl`	⚭	`\textmarried`
´	`\textasciiacute`	℧	`\textmho`
˘	`\textasciibreve`	−	`\textminus`
ˇ	`\textasciicaron`	µ	`\textmu`
¨	`\textasciidieresis`	♪	`\textmusicalnote`
`	`\textasciigrave`	₦	`\textnaira`
¯	`\textasciimacron`	9	`\textnineoldstyle`
*	`\textasteriskcentered`	№	`\textnumero`
฿	`\textbaht`	Ω	`\textohm`
‖	`\textbardbl`	½	`\textonehalf`

(continued on next page)

(continued from previous page)

	◯	\textbigcircle
	ƀ	\textblank
	⋆	\textborn
	¦	\textbrokenbar
	•	\textbullet
	℃	\textcelsius
	¢	\textcent
	¢	\textcentoldstyle
	Ⓟ	\textcircledP
	₵	\textcolonmonetary
	ↄ	\textcopyleft
©	©	\textcopyright
	¤	\textcurrency
	†	\textdagger
	‡	\textdaggerdbl
	⸗	\textdblhyphen
	=	\textdblhyphenchar
	°	\textdegree
	†	\textdied
	⁒	\textdiscount
	÷	\textdiv
	o|o	\textdivorced
	$	\textdollar
	$	\textdollaroldstyle
	₫	\textdong
	↓	\textdownarrow
	8	\texteightoldstyle
	℮	\textestimated
	€	\texteuro
	5	\textfiveoldstyle
	f	\textflorin
	4	\textfouroldstyle
	/	\textfractionsolidus
	‟	\textgravedbl
	₲	\textguarani
	⸘	\textinterrobang
	⸮	\textinterrobangdown
	⟨	\textlangle
	⟦	\textlbrackdbl
	🍃	\textleaf
	←	\textleftarrow
	£	\textlira
	¬	\textlnot
	{	\textlquill
	1	\textoneoldstyle
	¼	\textonequarter
	¹	\textonesuperior
	∘	\textopenbullet
a	ª	\textordfeminine
o	º	\textordmasculine
	¶	\textparagraph
	·	\textperiodcentered
	‰	\textpertenthousand
	‰	\textperthousand
	₱	\textpeso
	¶	\textpilcrow
	±	\textpm
	'	\textquotesingle
	‚	\textquotestraightbase
	„	\textquotestraightdblbase
	⟩	\textrangle
	⟧	\textrbrackdbl
	℞	\textrecipe
	※	\textreferencemark
®	®	\textregistered
	→	\textrightarrow
	}	\textrquill
	§	\textsection
	℠	\textservicemark
	7	\textsevenoldstyle
	6	\textsixoldstyle
	£	\textsterling
	√	\textsurd
	3	\textthreeoldstyle
	¾	\textthreequarters
	—	\textthreequartersemdash
	³	\textthreesuperior
	~	\texttildelow
	×	\texttimes
TM	™	\texttrademark
	—	\texttwelveudash
	2	\texttwooldstyle
	²	\texttwosuperior
	↑	\textuparrow
	₩	\textwon
	¥	\textyen
	0	\textzerooldstyle

Where two symbols are present, the left one is the "faked" symbol that LaTeX 2_ε provides by default, and the right one is the "true" symbol that textcomp makes available.

These symbols are also available in math mode through the use of the mathcomp package. See the mathcomp documentation for usage information.

Rather than use the bulky `\textoneoldstyle`, `\texttwooldstyle`, etc. commands, consider using `\oldstylenums{...}` to typeset an old-style number.

Table 9: wasysym Phonetic Symbols

Ð	\DH	ð	\dh	ɔ	\openo
Þ	\Thorn	ə	\inve	þ	\thorn

Table 10: tipa Phonetic Symbols

ɤ	\textbabygamma	ʔ	\textglotstop	ɭ	\textrtaill
ƀ	\textbarb	ˈ	\texthalflength	ɳ	\textrtailn
ɕ	\textbarc	ъ	\texthardsign	ɽ	\textrtailr
đ	\textbard	˞	\texthooktop	ʂ	\textrtails
ɟ	\textbardotlessj	ɓ	\texthtb	ʈ	\textrtailt
ɡ	\textbarg	ʃ	\texthtbardotlessj	ʐ	\textrtailz
ʔ	\textbarglotstop	ƈ	\texthtc	ˠ	\textrthook
ɨ	\textbari	ɗ	\texthtd	ʌ	\textsca
ɬ	\textbarl	ɠ	\texthtg	ʙ	\textscb
ɵ	\textbaro	ɦ	\texthth	ᴇ	\textsce
ʕ	\textbarrevglotstop	ʄ	\texththeng	ɢ	\textscg
ʉ	\textbaru	ƙ	\texthtk	ʜ	\textsch
ɬ	\textbeltl	ƥ	\texthtp	ə	\textschwa
β	\textbeta	ɋ	\texthtq	ɪ	\textsci
⊙	\textbullseye	ɠ	\texthtscg	ᴊ	\textscj
ˊ	\textceltpal	ʈ	\texthtt	ʟ	\textscl
χ	\textchi	ʰʋ	\texthvlig	ɴ	\textscn
ɛ	\textcloseepsilon	ʖ	\textinvglotstop	ɶ	\textscoelig
ɷ	\textcloseomega	ʁ	\textinvscr	ɷ	\textscomega
ɜ	\textcloserevepsilon	ι	\textiota	ǫ	\textscq
ʒ	\textcommatailz	λ	\textlambda	ʀ	\textscr
˺	\textcorner	ː	\textlengthmark	ɑ	\textscripta
ƀ	\textcrb	ʮ	\textlhookt	ʊ	\textscriptv
đ	\textcrd	ɪ	\textlhti	ᴜ	\textscu
ɡ	\textcrg	ˡ	\textlhtlongi	ʏ	\textscy
ħ	\textcrh	ˡ	\textlonglegr	ˈ	\textsecstress
ʖ	\textcrinvglotstop	˂	\textlptr	ъ	\textsoftsign
ƛ	\textcrlambda	ɱ	\textltailm	ʗ	\textstretchc
ƻ	\textcrtwo	ɲ	\textltailn	ʨ	\texttctclig
ɕ	\textctc	ɫ	\textltilde	ʧ	\textteshlig
ɖ	\textctd	ƛ	\textlyoghlig	θ	\texttheta
ʤ	\textctdctzlig	ŋ	\textnrleg	þ	\textthorn
ʃ	\textctesh	ɟ	\textObardotlessj	ʦ	\texttslig
ʝ	\textctj	ƣ	\textOlyoghlig	ɐ	\textturna
ɳ	\textctn	ω	\textomega	ɞ	\textturncelig
ʈ	\textctt	˽	\textopencorner	ɥ	\textturnh
ʧ	\textcttctclig	ɔ	\textopeno	ɮ	\textturnk
ʒ	\textctyogh	˛	\textpalhook	ʎ	\textturnlonglegr
ʑ	\textctz	ɸ	\textphi	ɯ	\textturnm
ʤ	\textdctzlig	ǀ	\textpipe	ɰ	\textturnmrleg
ʩ	\textdoublebaresh	ˈ	\textprimstress	ɹ	\textturnr
ǂ	\textdoublebarpipe	ˀ	\textraiseglotstop	ɻ	\textturnrrtail
≠	\textdoublebarslash	ˡ	\textraisevibyi	ɒ	\textturnscripta
‖	\textdoublepipe	ɤ	\textramshorns	ʇ	\textturnt

(continued on next page)

(continued from previous page)

‖	\textdoublevertline	▫	\textrectangle	ʌ	\textturnv
↓	\textdownstep	ʿ	\textrevapostrophe	ʍ	\textturnw
ʤ	\textdyoghlig	ɵ	\textreve	ʎ	\textturny
ʤ	\textdzlig	ɜ	\textrevepsilon	ʊ	\textupsilon
ɛ	\textepsilon	ʕ	\textrevglotstop	↑	\textupstep
ʃ	\textesh	ȝ	\textrevyogh	|	\textvertline
ɾ	\textfishhookr	ɜ˞	\textrhookrevepsilon	ɿ	\textvibyi
g	\textg	ɚ	\textrhookschwa	ʏ	\textvibyy
ɣ	\textgamma	˞	\textrhoticity	ƿ	\textwynn
↘	\textglobfall	˃	\textrptr	ʒ	\textyogh
↗	\textglobrise	ɖ	\textrtaild		

tipa defines shortcut characters for many of the above. It also defines a command \tone for denoting tone letters (pitches). See the tipa documentation for more information.

Table 11: marvosym Currency Symbols

𐆘	\Denarius	€	\EUR	€	\EURdig	€	\EURtm	₣	\Pfund
@	\Ecommerce	€	\EURcr	€	\EURhv	$	\EyesDollar	ƒ	\Shilling

Note that:

- \Deleatur is another macro name for \Denarius.
- The different euro signs are meant to be compatible with different fonts—Courier (\EURcr), Helvetica (\EURhv), Times (\EURtm), and the marvosym digits listed in Table 50 (\EURdig).

2 Mathematical symbols

Most, but not all, of the symbols in this section are math-mode only. That is, they yield a "`Missing $ inserted`" error message if not used within `$`...`$`, `\[`...`\]`, or another math-mode environment. Operators marked as "variable-sized" are taller in displayed formulas, shorter in in-text formulas, and possibly shorter still when used in various levels of superscripts or subscripts.

Alphanumeric symbols (e.g., "$\mathscr{L}$" and "$\mathbb{Z}$") are usually produced using one of the math alphabets in Table 53 rather than with an explicit symbol command. Look there first if you need a symbol for a transform, number set, or some other alphanumeric.

Table 12: Binary Operators

$\amalg$	`\amalg`	$\cup$	`\cup`	$\oplus$	`\oplus`	$\times$	`\times`
$*$	`\ast`	$\dagger$	`\dagger`	$\oslash$	`\oslash`	$\triangleleft$	`\triangleleft`
$\bigcirc$	`\bigcirc`	$\ddagger$	`\ddagger`	$\otimes$	`\otimes`	$\triangleright$	`\triangleright`
$\bigtriangledown$	`\bigtriangledown`	$\diamond$	`\diamond`	$\pm$	`\pm`	$\unlhd$*	`\unlhd`*
$\bigtriangleup$	`\bigtriangleup`	$\div$	`\div`	$\rhd$*	`\rhd`*	$\unrhd$*	`\unrhd`*
$\bullet$	`\bullet`	$\lhd$*	`\lhd`*	$\setminus$	`\setminus`	$\uplus$	`\uplus`
$\cap$	`\cap`	$\mp$	`\mp`	$\sqcap$	`\sqcap`	$\vee$	`\vee`
$\cdot$	`\cdot`	$\odot$	`\odot`	$\sqcup$	`\sqcup`	$\wedge$	`\wedge`
$\circ$	`\circ`	$\ominus$	`\ominus`	$\star$	`\star`	$\wr$	`\wr`

* Not predefined in LaTeX 2_ε. Use one of the packages latexsym, amsfonts, amssymb, txfonts, pxfonts, or wasysym.

Table 13: Relation Symbols

$\approx$	`\approx`	$\in$	`\in`	$\prec$	`\prec`	$\subset$	`\subset`
$\asymp$	`\asymp`	$\bowtie$	`\Join`*	$\preceq$	`\preceq`	$\subseteq$	`\subseteq`
$\bowtie$	`\bowtie`	$\leq$	`\leq`	$\propto$	`\propto`	$\succ$	`\succ`
$\cong$	`\cong`	$\ll$	`\ll`	$\sim$	`\sim`	$\succeq$	`\succeq`
$\dashv$	`\dashv`	$\mid$	`\mid`	$\simeq$	`\simeq`	$\supset$	`\supset`
$\doteq$	`\doteq`	$\models$	`\models`	$\smile$	`\smile`	$\supseteq$	`\supseteq`
$\equiv$	`\equiv`	$\neq$	`\neq`	$\sqsubset$*	`\sqsubset`*	$\vdash$	`\vdash`
$\frown$	`\frown`	$\ni$	`\ni`	$\sqsubseteq$	`\sqsubseteq`		
$\geq$	`\geq`	$\parallel$	`\parallel`	$\sqsupset$*	`\sqsupset`*		
$\gg$	`\gg`	$\perp$	`\perp`	$\sqsupseteq$	`\sqsupseteq`		

* Not predefined in LaTeX 2_ε. Use one of the packages latexsym, amsfonts, amssymb, txfonts, pxfonts, or wasysym.

Table 14: Punctuation Symbols (Math Mode)

,	`,`	;	`;`	:	`\colon`*	.	`\ldotp`	$\cdot$	`\cdotp`

* While "`:`" is valid in math mode, `\colon` uses different surrounding spacing. See Section 5.3 and the Short Math Guide for LaTeX [Dow00] for more information on math-mode spacing.

Table 15: Arrow Symbols

$\Downarrow$	`\Downarrow`	$\longleftarrow$	`\longleftarrow`	$\Rightarrow$	`\Rightarrow`
$\downarrow$	`\downarrow`	$\Longleftarrow$	`\Longleftarrow`	$\rightharpoonup$	`\rightharpoonup`
$\hookleftarrow$	`\hookleftarrow`	$\longleftrightarrow$	`\longleftrightarrow`	$\rightharpoonup$	`\rightharpoonup`
$\hookrightarrow$	`\hookrightarrow`	$\Longleftrightarrow$	`\Longleftrightarrow`	$\rightleftharpoons$	`\rightleftharpoons`
$\leadsto$*	`\leadsto`*	$\longmapsto$	`\longmapsto`	$\searrow$	`\searrow`
$\Leftarrow$	`\Leftarrow`	$\longrightarrow$	`\longrightarrow`	$\swarrow$	`\swarrow`
$\leftarrow$	`\leftarrow`	$\Longrightarrow$	`\Longrightarrow`	$\uparrow$	`\uparrow`
$\leftharpoondown$	`\leftharpoondown`	$\mapsto$	`\mapsto`	$\Uparrow$	`\Uparrow`
$\leftharpoonup$	`\leftharpoonup`	$\nearrow$	`\nearrow`	$\Updownarrow$	`\Updownarrow`
$\Leftrightarrow$	`\Leftrightarrow`	$\nwarrow$	`\nwarrow`	$\updownarrow$	`\updownarrow`
$\leftrightarrow$	`\leftrightarrow`	$\rightarrow$	`\rightarrow`		

* Not predefined in LaTeX 2_ε. Use one of the packages latexsym, amsfonts, amssymb, txfonts, pxfonts, or wasysym.

Table 16: Miscellaneous LaTeX 2_ε Symbols

$\aleph$	`\aleph`	ℓ	`\ell`	$\jmath$	`\jmath`	$\spadesuit$	`\spadesuit`
$\angle$	`\angle`	$\emptyset$	`\emptyset`	$\ldots$	`\ldots`	$\surd$	`\surd`
$\backslash$	`\backslash`	$\exists$	`\exists`	$\mho$*	`\mho`*	$\top$	`\top`
$\bot$	`\bot`	$\flat$	`\flat`	∇	`\nabla`	$\triangle$	`\triangle`
$\Box$*	`\Box`*	$\forall$	`\forall`	$\natural$	`\natural`	$\vdots$	`\vdots`
$\cdots$	`\cdots`	$\hbar$	`\hbar`	$\neg$	`\neg`	$\wp$	`\wp`
$\clubsuit$	`\clubsuit`	$\heartsuit$	`\heartsuit`	∂	`\partial`		
$\ddots$	`\ddots`	$\Im$	`\Im`	$\prime$	`\prime`		
$\Diamond$*	`\Diamond`*	$\imath$	`\imath`	$\Re$	`\Re`		
$\diamondsuit$	`\diamondsuit`	∞	`\infty`	$\sharp$	`\sharp`		

* Not predefined in LaTeX 2_ε. Use one of the packages latexsym, amsfonts, amssymb, txfonts, pxfonts, or wasysym.

Table 17: Variable-sized Math Operators

$\cap$ $\bigcap$	`\bigcap`	$\otimes$ $\bigotimes$	`\bigotimes`	$\wedge$ $\bigwedge$	`\bigwedge`	$\prod$ $\prod$	`\prod`
$\cup$ $\bigcup$	`\bigcup`	$\sqcup$ $\bigsqcup$	`\bigsqcup`	$\coprod$ $\coprod$	`\coprod`	$\sum$ $\sum$	`\sum`
$\odot$ $\bigodot$	`\bigodot`	$\uplus$ $\biguplus$	`\biguplus`	$\int$ $\int$	`\int`		
$\oplus$ $\bigoplus$	`\bigoplus`	$\vee$ $\bigvee$	`\bigvee`	$\oint$ $\oint$	`\oint`		

Table 18: 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.[1] Each log-like symbol merely produces the eponymous textual equivalent, but with proper surrounding spacing. See Section 5.3 for more information.

Table 19: Variable-sized Delimiters

$($	$\left(\right.$	`(`	`)`	$\left.\right)$	`)`	$\uparrow$	$\left\uparrow\right.$	`\uparrow`	$\Uparrow$	$\left\Uparrow\right.$	`\Uparrow`
$[$	$\left[\right.$	`[`	`]`	$\left.\right]$	`]`	$\downarrow$	$\left\downarrow\right.$	`\downarrow`	$\Downarrow$	$\left\Downarrow\right.$	`\Downarrow`
$\{$	$\left\{\right.$	`\{`	`}`	$\left.\right\}$	`\}`	$\updownarrow$	$\left\updownarrow\right.$	`\updownarrow`	$\Updownarrow$	$\left\Updownarrow\right.$	`\Updownarrow`
$\lfloor$	$\left\lfloor\right.$	`\lfloor`	$\rfloor$	$\left.\right\rfloor$	`\rfloor`	$\lceil$	$\left\lceil\right.$	`\lceil`	$\rceil$	$\left.\right\rceil$	`\rceil`
$\langle$	$\left\langle\right.$	`\langle`	$\rangle$	$\left.\right\rangle$	`\rangle`	$/$	$\left/\right.$	`/`	$\backslash$	$\left\backslash\right.$	`\backslash`
$\vert$	$\left\vert\right.$	`\vert`	$\Vert$	$\left.\right\Vert$	`\Vert`						

When used with `\left` and `\right`, these symbols expand to the height of the inner math expression.

Table 20: Large, Variable-sized Delimiters

$\backslash$	$\left.\right\backslash$	`\rmoustache`	$\int$	$\left\int\right.$	`\lmoustache`	$)$	$\left.\right)$	`\rgroup`	$($	$\left(\right.$	`\lgroup`
$\vert$	$\left\vert\right.$	`\arrowvert`	$\Vert$	$\left.\right\Vert$	`\Arrowvert`	$\vert$	$\left.\right\vert$	`\bracevert`			

These symbols *must* be used with `\left` and `\right`.

Table 21: Math-Mode Accents

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

Also note the existence of `\imath` and `\jmath`, which produce dotless versions of "$\imath$" and "$\jmath$". (See Table 16 on the preceding page.) 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 "$\hat{i}$".

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

Table 22: Some Other Constructions

$\widetilde{abc}$	`\widetilde{abc}`	$\widehat{abc}$	`\widehat{abc}`
$\overleftarrow{abc}$	`\overleftarrow{abc}`	$\overrightarrow{abc}$	`\overrightarrow{abc}`
$\overline{abc}$	`\overline{abc}`	$\underline{abc}$	`\underline{abc}`
$\overbrace{abc}$	`\overbrace{abc}`	$\underbrace{abc}$	`\underbrace{abc}`
$\sqrt{abc}$	`\sqrt{abc}`	$\sqrt[n]{abc}$	`\sqrt[n]{abc}`
f'	`f'`	$\frac{abc}{xyz}$	`\frac{abc}{xyz}`

Table 23: 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".

Table 24: AMS Delimiters

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

Table 25: AMS Arrows

$\circlearrowleft$	`\circlearrowleft`	$\leftleftarrows$	`\leftleftarrows`	$\rightleftarrows$	`\rightleftarrows`
$\circlearrowright$	`\circlearrowright`	$\leftrightarrows$	`\leftrightarrows`	$\rightleftharpoons$	`\rightleftharpoons`
$\curvearrowleft$	`\curvearrowleft`	$\leftrightharpoons$	`\leftrightharpoons`	$\rightrightarrows$	`\rightrightarrows`
$\curvearrowright$	`\curvearrowright`	$\leftrightsquigarrow$	`\leftrightsquigarrow`	$\rightsquigarrow$	`\rightsquigarrow`
$\dashleftarrow$	`\dashleftarrow`	$\Lleftarrow$	`\Lleftarrow`	$\Rsh$	`\Rsh`
$\dashrightarrow$	`\dashrightarrow`	$\looparrowleft$	`\looparrowleft`	$\twoheadleftarrow$	`\twoheadleftarrow`
$\downdownarrows$	`\downdownarrows`	$\looparrowright$	`\looparrowright`	$\twoheadrightarrow$	`\twoheadrightarrow`
$\downharpoonleft$	`\downharpoonleft`	$\Lsh$	`\Lsh`	$\upharpoonleft$	`\upharpoonleft`
$\downharpoonright$	`\downharpoonright`	$\multimap$	`\multimap`	$\upharpoonright$	`\upharpoonright`
$\leftarrowtail$	`\leftarrowtail`	$\rightarrowtail$	`\rightarrowtail`	$\upuparrows$	`\upuparrows`

Table 26: AMS Negated Arrows

$\nLeftarrow$	`\nLeftarrow`	$\nLeftrightarrow$	`\nLeftrightarrow`	$\nRightarrow$	`\nRightarrow`
$\nleftarrow$	`\nleftarrow`	$\nleftrightarrow$	`\nleftrightarrow`	$\nrightarrow$	`\nrightarrow`

Table 27: AMS Greek

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

Table 28: AMS Hebrew

$\beth$	`\beth`	$\daleth$	`\daleth`	$\gimel$	`\gimel`

Recall that `\aleph` appears in Table 16 on page 11.

Table 29: AMS Log-like Symbols

$\operatorname{inj\,lim}$	`\injlim`	$\varinjlim$	`\varinjlim`	$\varlimsup$	`\varlimsup`
$\operatorname{proj\,lim}$	`\projlim`	$\varliminf$	`\varliminf`	$\varprojlim$	`\varprojlim`

Load the amsmath package to get these symbols. See Section 5.3 for some additional comments regarding log-like symbols.

Table 30: Miscellaneous AMS Symbols

$\angle$	`\angle`	$\complement$	`\complement`	$\measuredangle$	`\measuredangle`
$\backprime$	`\backprime`	$\diagdown$	`\diagdown`	$\mho$	`\mho`
$\Bbbk$	`\Bbbk`	$\diagup$	`\diagup`	$\nexists$	`\nexists`
$\bigstar$	`\bigstar`	$\eth$	`\eth`	$\sphericalangle$	`\sphericalangle`
$\blacklozenge$	`\blacklozenge`	$\Finv$	`\Finv`	$\square$	`\square`
$\blacksquare$	`\blacksquare`	$\Game$	`\Game`	$\triangledown$	`\triangledown`
$\blacktriangle$	`\blacktriangle`	$\hbar$	`\hbar`	$\varnothing$	`\varnothing`
$\blacktriangledown$	`\blacktriangledown`	$\hslash$	`\hslash`	$\vartriangle$	`\vartriangle`
$\circledS$	`\circledS`	$\lozenge$	`\lozenge`		

Table 31: AMS Commands Defined to Work in Both Math and Text Mode

✓	`\checkmark`	®	`\circledR`	✠	`\maltese`

Table 32: AMS Binary Operators

$\barwedge$	`\barwedge`	$\circledcirc$	`\circledcirc`	$\intercal$	`\intercal`
$\boxdot$	`\boxdot`	$\circleddash$	`\circleddash`	$\leftthreetimes$	`\leftthreetimes`
$\boxminus$	`\boxminus`	$\Cup$	`\Cup`	$\ltimes$	`\ltimes`
$\boxplus$	`\boxplus`	$\curlyvee$	`\curlyvee`	$\rightthreetimes$	`\rightthreetimes`
$\boxtimes$	`\boxtimes`	$\curlywedge$	`\curlywedge`	$\rtimes$	`\rtimes`
$\Cap$	`\Cap`	$\divideontimes$	`\divideontimes`	$\smallsetminus$	`\smallsetminus`
$\centerdot$	`\centerdot`	$\dotplus$	`\dotplus`	$\veebar$	`\veebar`
$\circledast$	`\circledast`	$\doublebarwedge$	`\doublebarwedge`		

Table 33: AMS Binary Relations

$\approx$	\approx	$\gtrdot$	\gtrdot	$\smile$	\smallsmile
$\ni$	\backepsilon	$\geq$	\geq	$\sqsubset$	\sqsubset
$\backsim$	\backsim	$\gtrless$	\gtrless	$\sqsupset$	\sqsupset
$\backsim$	\backsimeq	$\gtrless$	\gtrless	$\Subset$	\Subset
$\because$	\because	$\gtrsim$	\gtrsim	$\subseteq$	\subseteq
$\between$	\between	$\leq$	\leq	$\succapprox$	\succapprox
$\blacktriangleleft$	\blacktriangleleft	$\leq$	\leq	$\succcurlyeq$	\succcurlyeq
$\blacktriangleright$	\blacktriangleright	$\lesssim$	\lesssim	$\succsim$	\succsim
$\Bumpeq$	\Bumpeq	$\lessdot$	\lessdot	$\Supset$	\Supset
$\bumpeq$	\bumpeq	$\lesseqgtr$	\lesseqgtr	$\supseteq$	\supseteq
$\circeq$	\circeq	$\lesseqgtr$	\lesseqgtr	$\therefore$	\therefore
$\curlyeqprec$	\curlyeqprec	$\lesssim$	\lesssim	$\approx$	\thickapprox
$\curlyeqsucc$	\curlyeqsucc	$\lesssim$	\lesssim	$\sim$	\thicksim
$\doteq$	\doteq	$\lll$	\lll	$\trianglelefteq$	\trianglelefteq
$\eqcirc$	\eqcirc	$\pitchfork$	\pitchfork	$\triangleq$	\triangleq
$\geq$	\geq	$\precapprox$	\precapprox	$\trianglerighteq$	\trianglerighteq
$\leq$	\leq	$\preccurlyeq$	\preccurlyeq	$\propto$	\varpropto
$\fallingdotseq$	\fallingdotseq	$\precsim$	\precsim	$\vartriangleleft$	\vartriangleleft
$\geq$	\geq	$\risingdotseq$	\risingdotseq	$\vartriangleright$	\vartriangleright
$\geq$	\geq	$\shortmid$	\shortmid	$\Vdash$	\Vdash
$\ggg$	\ggg	$\shortparallel$	\shortparallel	$\vDash$	\vDash
$\gtrapprox$	\gtrapprox	$\smallfrown$	\smallfrown	$\Vvdash$	\Vvdash

Table 34: AMS Negated Binary Relations

$\gnapprox$	\gnapprox	$\nleq$	\nleq	$\ntrianglerighteq$	\ntrianglerighteq
$\gneq$	\gneq	$\nless$	\nless	$\nvdash$	\nvdash
$\gneq$	\gneq	$\nmid$	\nmid	$\nvDash$	\nvDash
$\gnsim$	\gnsim	$\nparallel$	\nparallel	$\nVDash$	\nVDash
$\gvertneqq$	\gvertneqq	$\nprec$	\nprec	$\precnapprox$	\precnapprox
$\lnapprox$	\lnapprox	$\npreceq$	\npreceq	$\precnsim$	\precnsim
$\lneq$	\lneq	$\nshortmid$	\nshortmid	$\subsetneq$	\subsetneq
$\lneq$	\lneq	$\nshortparallel$	\nshortparallel	$\subsetneq$	\subsetneq
$\lnsim$	\lnsim	$\nsim$	\nsim	$\succnapprox$	\succnapprox
$\lvertneqq$	\lvertneqq	$\nsubseteq$	\nsubseteq	$\succnsim$	\succnsim
$\ncong$	\ncong	$\nsucc$	\nsucc	$\supsetneq$	\supsetneq
$\ngeq$	\ngeq	$\nsucceq$	\nsucceq	$\supsetneq$	\supsetneq
$\ngeq$	\ngeq	$\nsupseteq$	\nsupseteq	$\varsubsetneq$	\varsubsetneq
$\ngeq$	\ngeq	$\nsupseteq$	\nsupseteq	$\varsubsetneq$	\varsubsetneq
$\ngeq$	\ngeq	$\ntriangleleft$	\ntriangleleft	$\varsupsetneq$	\varsupsetneq
$\nleq$	\nleq	$\ntrianglelefteq$	\ntrianglelefteq	$\varsupsetneq$	\varsupsetneq
$\nleq$	\nleq	$\ntriangleright$	\ntriangleright		

Table 35: stmaryrd Delimiters

$\Lbag$	\Lbag	$\Rbag$	\Rbag	$\lbag$	\lbag	$\rbag$	\rbag
$\llceil$	\llceil	$\rrceil$	\rrceil	$\llfloor$	\llfloor	$\rrfloor$	\rrfloor
$\llbracket$	\llbracket	$\rrbracket$	\rrbracket				

Table 36: stmaryrd Arrows

⇦	\leftarrowtriangle	⤇	\Mapsfrom	↓	\shortdownarrow
⇳	\leftrightarroweq	⤅	\mapsfrom	←	\shortleftarrow
⇹	\leftrightarrowtriangle	⤇	\Mapsto	→	\shortrightarrow
↯	\lightning	↗	\nnearrow	↑	\shortuparrow
⟽	\Longmapsfrom	↖	\nnwarrow	↘	\ssearrow
⟼	\longmapsfrom	⇸	\rightarrowtriangle	↙	\sswarrow
⟾	\Longmapsto	⦈	\rrparenthesis		

Table 37: stmaryrd Extension Characters

⧸	\Arrownot	⦙	\Mapsfromchar	⦘	\Mapstochar
⧹	\arrownot	⦘	\mapsfromchar		

Table 38: 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 39: Variable-sized stmaryrd Math Operators

⨆	\bigbox	⫼	\biginterleave	⨅	\bigsqcap
⋎	\bigcurlyvee	⨢	\bignplus	⨄	\bigtriangledown
⋏	\bigcurlywedge	⫼	\bigparallel	⨆	\bigtriangleup

Table 40: stmaryrd Binary Relations

⊎	\inplus	⊆⊎	\subsetpluseq	⩤	\triangleleftqslant
⊎	\niplus	⊇⊎	\supsetplus	⩥	\triangleright eqslant
⊎	\subsetplus	⊇⊎	\supsetpluseq		

Table 41: stmaryrd Negated Binary Relations

$\ntriangleleftequal$	`\ntriangleleftequal`	$\ntrianglerightequal$	`\ntrianglerightequal`

Table 42: Variable-sized wasysym Math Operators

$\iiint$ $\iiint$	`\iiint`	$\oiint$ $\oiint$	`\oiint`	$\varoint$ $\varoint$	`\varoint`
$\iint$ $\iint$	`\iint`	$\int$ $\int$	`\varint`		

Table 43: Other wasysym Math-Mode Symbols

$\gtrsim$	`\apprge`	$\bowtie$	`\Join`	$\mho$	`\mho`	$\sqsupset$	`\sqsupset`
$\lesssim$	`\apprle`	$\rightsquigarrow$	`\leadsto`	$\bigcirc$	`\ocircle`	$\trianglelefteq$	`\unlhd`
$\square$	`\Box`	$\triangleleft$	`\lhd`	$\triangleright$	`\rhd`	$\trianglerighteq$	`\unrhd`
$\diamond$	`\Diamond`	$\blacktriangleleft$	`\LHD`	$\blacktriangleright$	`\RHD`	$\propto$	`\wasypropto`
$\neg$	`\invneg`	$\circledast$	`\logof`	$\sqsubset$	`\sqsubset`		

Table 44: txfonts/pxfonts Binary Operators

$\circledbar$	`\circledbar`	$\circledwedge$	`\circledwedge`	$\medcirc$	`\medcirc`
$\circledbslash$	`\circledbslash`	$\invamp$	`\invamp`	$\sqcapplus$	`\sqcapplus`
$\circledvee$	`\circledvee`	$\medbullet$	`\medbullet`	$\sqcupplus$	`\sqcupplus`

Table 45: txfonts/pxfonts Binary Relations

$\Leftarrow\!\boxdot$	`\boxdotLeft`	$\lrtimes$	`\lrtimes`	$\nleqq$	`\npreceqq`
$\leftarrow\!\boxdot$	`\boxdotleft`	$\Mapsto$	`\Mappedfromchar`	$\nless$	`\nprecsim`
$\boxdot\!\rightarrow$	`\boxdotright`	$\mapsto$	`\mappedfromchar`	$\nsim$	`\nsimeq`
$\boxdot\!\Rightarrow$	`\boxdotRight`	$\mmapsto$	`\mmappedfromchar`	$\nsqsubset$	`\nsqsubset`
$\leftarrow\!\square$	`\boxleft`	$\Mmapsto$	`\Mmappedfromchar`	$\nsqsubseteq$	`\nsqsubseteq`
$\Leftarrow\!\square$	`\boxLeft`	$\mmapsto$	`\mmapstochar`	$\nsqsupset$	`\nsqsupset`
$\square\!\Rightarrow$	`\boxRight`	$\Mmapsto$	`\Mmapstochar`	$\nsqsupseteq$	`\nsqsupseteq`
$\square\!\rightarrow$	`\boxright`	$\multimapboth$	`\multimapboth`	$\nsubset$	`\nSubset`
$\leftarrow\!\odot$	`\circleddotleft`	$\multimapbothvert$	`\multimapbothvert`	$\nsubseteq$	`\nsubseteqq`
$\odot\!\rightarrow$	`\circleddotright`	$\multimapdot$	`\multimapdot`	$\nsucc$	`\nsuccapprox`
$\circledgtr$	`\circledgtr`	$\multimapdotboth$	`\multimapdotboth`	$\nsucc$	`\nsucccurlyeq`
$\circledless$	`\circledless`	$\multimapdotbothA$	`\multimapdotbothA`	$\nsucc$	`\nsucceqq`
$\leftarrow\!\bigcirc$	`\circleleft`	$\multimapdotbothAvert$	`\multimapdotbothAvert`	$\nsucc$	`\nsuccsim`
$\bigcirc\!\rightarrow$	`\circleright`	$\multimapdotbothB$	`\multimapdotbothB`	$\nsupset$	`\nSupset`
$:\approx$	`\colonapprox`	$\multimapdotbothBvert$	`\multimapdotbothBvert`	$\nsim$	`\nthickapprox`
$::\approx$	`\Colonapprox`	$\multimapdotbothvert$	`\multimapdotbothvert`	$\nleftarrow$	`\ntwoheadleftarrow`
$:-$	`\coloneq`	$\multimapdotinv$	`\multimapdotinv`	$\nrightarrow$	`\ntwoheadrightarrow`
$::-$	`\Coloneq`	$\multimapinv$	`\multimapinv`	$\nparallel$	`\nvarparallel`
$:=$	`\coloneqq`	$\napprox$	`\napproxeq`	$\nparallel$	`\nvarparallelinv`

(continued on next page)

(continued from previous page)

::=	\Coloneqq	≭	\nasymp	⫦	\nVdash
:∼	\colonsim	∽̸	\nbacksim	⤡	\Nwarrow
::∼	\Colonsim	≌̸	\nbacksimeq	⨯	\openJoin
↔	\dashleftrightarrow	≠	\nBumpeq	×	\opentimes
←◇	\Diamonddotleft	≠	\nbumpeq	⫫	\Perp
⇐◇	\DiamonddotLeft	⇗	\Nearrow	≦	\preceqq
◇→	\Diamonddotright	≢	\nequiv	≨	\precneqq
◇⇒	\DiamonddotRight	≯	\ngg	⋊	\rJoin
←◇	\Diamondleft	≵	\ngtrapprox	⇛	\Rrightarrow
⇐◇	\DiamondLeft	≯	\ngtrless	⤡	\Searrow
◇→	\Diamondright	≵	\ngtrsim	ϵ⊢	\strictfi
◇⇒	\DiamondRight	≉	\nlessapprox	⊣	\strictif
−::	\Eqcolon	≮	\nlessgtr	ϵ⊣	\strictiff
−:	\eqcolon	≴	\nlesssim	≧	\succeqq
=::	\Eqqcolon	≪̸	\nll	≩	\succneqq
=:	\eqqcolon	∉	\notin	⤢	\Swarrow
≈	\eqsim	∌	\notni	∥	\varparallel
↜	\leftsquigarrow	≉	\nprecapprox	∥	\varparallelinv
⋉	\lJoin	⋠	\npreccurlyeq	⫢	\VvDash

Table 46: txfonts/pxfonts Upright Greek Letters

α	\alphaup	θ	\thetaup	π	\piup	ϕ	\phiup
β	\betaup	ϑ	\varthetaup	ϖ	\varpiup	φ	\varphiup
γ	\gammaup	ι	\iotaup	ρ	\rhoup	χ	\chiup
δ	\deltaup	κ	\kappaup	ϱ	\varrhoup	ψ	\psiup
ϵ	\epsilonup	λ	\lambdaup	σ	\sigmaup	ω	\omegaup
ε	\varepsilonup	μ	\muup	ς	\varsigmaup		
ζ	\zetaup	ν	\nuup	τ	\tauup		
η	\etaup	ξ	\xiup	υ	\upsilonup		

Table 47: 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 48: Variable-sized txfonts/pxfonts Math Operators

⨅	⨅	\bigsqcapplus	∮	∮	\ointclockwise
⨆	⨆	\bigsqcupplus	∮	∮	\ointctrclockwise
⨍	⨍	\fint	∰	∭	\sqiiint
∫⋯∫	∫⋯∫	\idotsint	∬	∬	\sqiint
∬∬	∬∬	\iiiint	∫	∫	\sqint
∭	∭	\iiint	∰	∭	\varoiiintclockwise
∬	∬	\iint	∰	∭	\varoiiintctrclockwise
∰	∭	\oiiintclockwise	∯	∬	\varoiintclockwise
∰	∭	\oiiintctrclockwise	∯	∬	\varoiintctrclockwise
∰	∭	\oiiint	∮	∮	\varointclockwise
∯	∬	\oiintclockwise	∮	∮	\varointctrclockwise
∯	∬	\oiintctrclockwise	×	×	\varprod
∯	∬	\oiint			

Table 49: Miscellaneous txfonts/pxfonts Symbols

◆	\Diamondblack	ƛ	\lambdaslash	♣	\varclubsuit	♤	\varspadesuit
◇	\Diamonddot	¢	\mathcent	♦	\vardiamondsuit		
ƛ	\lambdabar	£	\mathsterling	♥	\varheartsuit		

Table 50: marvosym Math Symbols

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

∢	\Anglesign	·	\Squaredot	→	\Vectorarrowhigh
≙	\Corresponds	→	\Vectorarrow		

Table 51: ar Aspect Ratio Symbol

Æ	\AR

Table 52: ulsy Contradiction and Other Symbols

ϟ	\blitza	ϟ	\blitzb	ϟ	\blitzc	ϟ	\blitzd	ϟ	\blitze	⊖	\odplus

Table 53: Math Alphabets

		Required package
ABCdef123	`\mathrm{ABCdef123}`	*none*
ABCdef123	`\mathit{ABCdef123}`	*none*
$ABCdef123$	`\mathnormal{ABCdef123}`	*none*
$\mathcal{ABC}$	`\mathcal{ABC}`	*none*
$\mathscr{ABC}$	`\mathscr{ABC}`	mathrsfs
$\mathcal{ABC}$	`\mathcal{ABC}`	euscript with option: mathcal
or	`\mathscr{ABC}`	euscript with option: mathcr
ABCdef123	`\mathpzc{ABCdef123}`	none; manually defined*
$\mathbb{ABC}$	`\mathbb{ABC}`	amsfonts, amssymb, txfonts, or pxfonts
$\mathbf{ABC}$	`\varmathbb{ABC}`	txfonts or pxfonts
$\mathbb{ABCdef123}$	`\mathbb{ABCdef123}`	bbold
$\mathbb{ABCdef12}$	`\mathbb{ABCdef12}`	bbm
$\mathbb{ABCdef12}$	`\mathbb{ABCdef12}`	bbm
$\mathbb{ABCdef12}$	`\mathbb{ABCdef12}`	bbm
$\mathbb{ABC1}$	`\mathbb{ABC1}`	dsfont
$\mathbb{ABC1}$	`\mathbb{ABC1}`	dsfont with option: sans
$\mathfrak{ABCdef123}$	`\mathfrak{ABCdef123}`	eufrak
$\mathfrak{ABCdef123}$	`\textfrak{ABCdef123}`	yfonts
$\mathfrak{ABCdef123}$	`\textswab{ABCdef123}`	yfonts

* Put "`\DeclareMathAlphabet{\mathpzc}{OT1}{pzc}{m}{it}`" in your document's preamble to make `\mathpzc` typeset its argument in Zapf Chancery.

3 Science and technology symbols

This section lists symbols that are employed in various branches of science and engineering (and, because we were extremely liberal in our classification, astrology, too).

Table 54: wasysym Electrical and Physical Symbols

∼	\AC	≋	\VHF	∿∿∿	\photon	≈	\HF	ᘐᘐᘐᘐᘐᘐᘐᘐᘐ	\gluon

Table 55: wasysym Astronomical Symbols

☊	\ascnode	♃	\jupiter	●	\newmoon	♀	\venus
⊙	\astrosun	☾	\leftmoon	♇	\pluto	♈	\vernal
☋	\descnode	♂	\mars	☽	\rightmoon		
♁	\earth	☿	\mercury	♄	\saturn		
○	\fullmoon	♆	\neptune	♅	\uranus		

Table 56: wasysym APL Symbols

⍞	\APLbox	⍩	\APLinv	⍟	\APLstar
⍝	\APLcomment	⍇	\APLleftarrowbox	⍋	\APLup
⍒	\APLdown	⍟	\APLlog	⍐	\APLuparrowbox
⍗	\APLdownarrowbox	⍤	\APLminus	⍀	\notbackslash
⍞	\APLinput	⍈	\APLrightarrowbox	⌿	\notslash

Table 57: wasysym APL Modifiers

∘	\APLcirc{}	∼	\APLnot{}	|	\APLvert{}

Table 58: marvosym Engineering Symbols

⚌	\Beam	↓	\Force	●	\Octosteel	⌶	\RoundedTTsteel
⚠	\Bearing	⬢	\Hexasteel	◘	\Rectpipe	◘	\Squarepipe
○	\Circpipe	⸮	\Lefttorque	■	\Rectsteel	■	\Squaresteel
●	\Circsteel	⚞	\Lineload	⸮	\Righttorque	⊤	\Tsteel
⚠	\Fixedbearing	⚠	\Loosebearing	⊤	\RoundedLsteel	⌶	\TTsteel
▬	\Flatsteel	⊥	\Lsteel	⊥	\RoundedTsteel		

Table 59: marvosym Biological Symbols

♀	\Female	⚤	\FemaleMale	⚥	\MALE	⚲	\Neutral
⚢	\FEMALE	⚥	\Hermaphrodite	♂	\Male		
⚢	\FemaleFemale	⚥	\HERMAPHRODITE	⚣	\MaleMale		

Table 60: marvosym Astronomical Symbols

☿	\Mercury	♂	\Mars	♅	\Uranus	☉	\Sun
♀	\Venus	♃	\Jupiter	♆	\Neptune	☽	\Moon
♁	\Earth	♄	\Saturn	♇	\Pluto		

Table 61: marvosym Astrological Symbols

♈	\Aries	♋	\Cancer	♎	\Libra	♑	\Capricorn
♉	\Taurus	♌	\Leo	♏	\Scorpio	♒	\Aquarius
♊	\Gemini	♍	\Virgo	♐	\Sagittarius	♓	\Pisces

Note that \Aries...\Pisces can also be specified with \Zodiac{1}... \Zodiac{12}.

Table 62: marvosym Communication Symbols

	\Email	FAX	\fax		\Faxmachine		\Lightning		\Pickup
	\Emailct	FAX	\FAX		\Letter		\Mobilefone	☎	\Telefon

Table 63: marvosym Safety-Related Symbols

	\Biohazard	CE	\CEsign	Ex	\Explosionsafe		\Radioactivity
	\BSEfree		\Estatically		\Laserbeam	STOP	\Stopsign

Table 64: marvosym Computer Hardware Symbols

	\ComputerMouse		\ParallelPort		\SerialInterface
	\Keyboard		\Printer		\SerialPort

Table 65: ifsym Pulse Diagram Symbols

	\FallingEdge		\LongPulseLow		\PulseLow		\ShortPulseHigh
	\LongPulseHigh		\PulseHigh		\RaisingEdge		\ShortPulseLow

In addition, within \textifsym{...}, the following codes are valid:

	l		m		h		d		<		>
	L		M		H		D		<<		>>

This enables one to write "\textifsym{mm<DDD>mm}" to get "" or "\textifsym{L|H|L|H|L}" to get "".

Finally, \textifsym supports the display of segmented digits, as would appear on an LCD: "\textifsym{-123.456}" produces "- 123.456". "\textifsym{b}" outputs a blank with the same width as an "8".

4 Other symbols

The following are all the symbols that didn't fit neatly or unambiguously into any of the previous sections. (Do weather symbols belong under "Science and technology"? Should dice be considered "mathematics"? Are checkboxes and smiley faces possibly body-text symbols?) While some of the tables contain clearly related groups of symbols (e.g., musical notes), others represent motley assortments of whatever the font designer felt like drawing.

Table 66: wasysym General Symbols

℧	\agemO	⌚	\clock	◄	\LEFTarrow	☺	\smiley
☠	\ataribox	¤	\currency	ϟ	\lightning	☼	\sun
♠	\bell	⌀	\diameter	♂	\male	▲	\UParrow
☻	\blacksmiley	▼	\DOWNarrow	‰	\permil	∢	\varangle
⋈	\Bowtie	♀	\female	☎	\phone	⌑	\wasylozenge
¦	\brokenvert	☹	\frownie	➪	\pointer	∴	\wasytherefore
¢	\cent	⍉	\invdiameter	✆	\recorder		
✓	\checked	✠	\kreuz	►	\RIGHTarrow		

Table 67: wasysym Polygons and Stars

☑	\CheckedBox	✡	\davidsstar	⯃	\octagon	✳	\varhexstar
□	\Square	⬡	\hexagon	⬠	\pentagon		
☒	\XBox	✳	\hexstar	⬡	\varhexagon		

Table 68: wasysym Musical Notes

♪	\eighthnote	𝅗𝅥	\halfnote	♫	\twonotes	𝅝	\fullnote	♩	\quarternote

See also \flat, \sharp, and \natural (Table 16).

Table 69: wasysym Circles

●	\CIRCLE	◐	\LEFTcircle	◑	\RIGHTcircle	↻	\rightturn
○	\Circle	◖	\Leftcircle	◗	\Rightcircle		
◖	\LEFTCIRCLE	◗	\RIGHTCIRCLE	↺	\leftturn		

Table 70: pifont Commands for Accessing Zapf Dingbats

✁	\ding{33}	✧	\ding{71}	❍	\ding{109}	⑩	\ding{181}	→	\ding{219}
✂	\ding{34}	★	\ding{72}	■	\ding{110}	❶	\ding{182}	➜	\ding{220}
✃	\ding{35}	☆	\ding{73}	❑	\ding{111}	❷	\ding{183}	→	\ding{221}
✄	\ding{36}	✪	\ding{74}	❒	\ding{112}	❸	\ding{184}	➞	\ding{222}

(continued on next page)

(continued from previous page)

	\ding{37}		\ding{75}	❑	\ding{113}	❹	\ding{185}	➟	\ding{223}
	\ding{38}		\ding{76}	❒	\ding{114}	❺	\ding{186}	➠	\ding{224}
	\ding{39}		\ding{77}	▲	\ding{115}	❻	\ding{187}	➡	\ding{225}
	\ding{40}		\ding{78}	▼	\ding{116}	❼	\ding{188}	➢	\ding{226}
	\ding{41}		\ding{79}	◆	\ding{117}	❽	\ding{189}	➢	\ding{227}
	\ding{42}		\ding{80}	❖	\ding{118}	❾	\ding{190}	➢	\ding{228}
	\ding{43}		\ding{81}	◗	\ding{119}	❿	\ding{191}	➥	\ding{229}
	\ding{44}		\ding{82}	❙	\ding{120}	①	\ding{192}	➦	\ding{230}
	\ding{45}		\ding{83}	❚	\ding{121}	②	\ding{193}	➧	\ding{231}
	\ding{46}		\ding{84}	❚	\ding{122}	③	\ding{194}	➡	\ding{232}
	\ding{47}		\ding{85}	❛	\ding{123}	④	\ding{195}	➪	\ding{233}
	\ding{48}		\ding{86}	❜	\ding{124}	⑤	\ding{196}	➪	\ding{234}
	\ding{49}		\ding{87}	❝	\ding{125}	⑥	\ding{197}	➪	\ding{235}
	\ding{50}		\ding{88}	❞	\ding{126}	⑦	\ding{198}	➪	\ding{236}
✓	\ding{51}		\ding{89}	❡	\ding{161}	⑧	\ding{199}	➪	\ding{237}
✔	\ding{52}		\ding{90}	❢	\ding{162}	⑨	\ding{200}	➪	\ding{238}
✕	\ding{53}		\ding{91}	❣	\ding{163}	⑩	\ding{201}	➪	\ding{239}
✖	\ding{54}		\ding{92}	❤	\ding{164}	❶	\ding{202}	➪	\ding{241}
✗	\ding{55}		\ding{93}	❥	\ding{165}	❷	\ding{203}	➪	\ding{242}
✘	\ding{56}		\ding{94}	❦	\ding{166}	❸	\ding{204}	➪	\ding{243}
✙	\ding{57}		\ding{95}	❧	\ding{167}	❹	\ding{205}	➘	\ding{244}
✚	\ding{58}		\ding{96}	♣	\ding{168}	❺	\ding{206}	➘	\ding{245}
✛	\ding{59}		\ding{97}	♦	\ding{169}	❻	\ding{207}	➘	\ding{246}
✜	\ding{60}		\ding{98}	♥	\ding{170}	❼	\ding{208}	➘	\ding{247}
†	\ding{61}		\ding{99}	♠	\ding{171}	❽	\ding{209}	➘	\ding{248}
†	\ding{62}		\ding{100}	①	\ding{172}	❾	\ding{210}	➘	\ding{249}
†	\ding{63}		\ding{101}	②	\ding{173}	❿	\ding{211}	→	\ding{250}
✠	\ding{64}		\ding{102}	③	\ding{174}	➔	\ding{212}	→	\ding{251}
✡	\ding{65}		\ding{103}	④	\ding{175}	→	\ding{213}	➡	\ding{252}
☆	\ding{66}		\ding{104}	⑤	\ding{176}	↔	\ding{214}	➡	\ding{253}
⌘	\ding{67}		\ding{105}	⑥	\ding{177}	↕	\ding{215}	➢	\ding{254}
⌘	\ding{68}		\ding{106}	⑦	\ding{178}	↖	\ding{216}		
✣	\ding{69}		\ding{107}	⑧	\ding{179}	→	\ding{217}		
✥	\ding{70}	●	\ding{108}	⑨	\ding{180}	↘	\ding{218}		

Table 71: marvosym Information Symbols

	\Bicycle		\Cutleft		\Industry		\Pointinghand
	\Checkedbox		\Cutline		\Info		\Rightscissors
	\Clocklogo		\Cutright		\Kutline		\Wheelchair
	\Coffeecup		\Football		\Ladiesroom		\Writinghand
	\Crossedbox		\Gentsroom		\Leftscissors		

Table 72: marvosym Navigation Symbols

▶	\Forward	▼	\MoveDown	⏮	\RewindToIndex	⏫	\ToTop
⏭	\ForwardToEnd	▲	\MoveUp	⏮	\RewindToStart		
⏭	\ForwardToIndex	◀	\Rewind	⏬	\ToBottom		

Table 73: marvosym Laundry Symbols

	\AtForty		\Handwash		\ShortNinetyFive
	\AtNinetyFive		\IroningI		\ShortSixty
	\AtSixty		\IroningII		\ShortThirty
	\Bleech		\IroningIII		\SpecialForty
	\CleaningA		\NoBleech		\Tumbler
	\CleaningF		\NoChemicalCleaning		\WashCotton
	\CleaningFF		\NoIroning		\WashSynthetics
	\CleaningP		\NoTumbler		\WashWool
	\CleaningPP		\ShortFifty		
	\Dontwash		\ShortForty		

Table 74: Other marvosym Symbols

	\Ankh		\Cross		\Heart		\Smiley
	\Bat		\FHBOlogo		\MartinVogel		\Womanface
	\Bouquet		\FHBOLOGO		\Mundus		\Yinyang
	\Celtcross		\Froway	@	\MVAt		
	\CircledA		\FullFHBO	→	\Rightarrow*		

* Standard LaTeX 2_ε defines \Rightarrow to display "⇒", while marvosym redefines it to display "→" (or ":" in math mode). This conflict can be problematic for math symbols defined in terms of \Rightarrow, such as \Longleftrightarrow, which ends up looking like "⇐:".

Table 75: manfnt Dangerous Bend Symbols

	\dbend		\lhdbend		\reversedvideodbend

Note that these symbols descend far beneath the baseline. manfnt also defines non-descending versions, which it calls, correspondingly, \textdbend, \textlhdbend, and \textreversedvideodbend.

Table 76: Other manfnt Symbols

	\manboldkidney		\manpenkidney
	\manconcentriccircles		\manquadrifolium
	\manconcentricdiamond		\manquartercircle
	\mancone		\manrotatedquadrifolium
	\mancube		\manrotatedquartercircle
	\manerrarrow		\manstar
	\manfilledquartercircle		\mantiltpennib
	\manhpennib	▼	\mantriangledown
	\manimpossiblecube	▶	\mantriangleright
	\mankidney	▲	\mantriangleup
	\manlhpenkidney		\manvpennib

Table 77: bbding Scissors

✂	\ScissorHollowLeft	✁	\ScissorLeftBrokenTop
✃	\ScissorHollowRight	✂	\ScissorRight
✂	\ScissorLeft	✁	\ScissorRightBrokenBottom
✁	\ScissorLeftBrokenBottom	✁	\ScissorRightBrokenTop

Table 78: bbding Hands

☛	\HandCuffLeft	☛	\HandCuffRightUp	✍	\HandPencilLeft
☛	\HandCuffLeftUp	☜	\HandLeft	☞	\HandRight
☛	\HandCuffRight	☜	\HandLeftUp	☞	\HandRightUp

Table 79: bbding Pencils and Nibs

✒	\NibLeft	✏	\PencilLeft	✎	\PencilRightDown
✒	\NibRight	✎	\PencilLeftDown	✎	\PencilRightUp
✒	\NibSolidLeft	✎	\PencilLeftUp		
✒	\NibSolidRight	✏	\PencilRight		

Table 80: bbding Crosses, Plusses, and Xs

✝	\Cross	✝	\CrossOutline	╳	\XSolid
✝	\CrossBoldOutline	✚	\Plus	✖	\XSolidBold
✠	\CrossClowerTips	✜	\PlusCenterOpen	✗	\XSolidBrush
✠	\CrossMaltese	✚	\PlusOutline		
✝	\CrossOpenShadow	✛	\PlusThinCenterOpen		

Table 81: bbding Stars, Flowers, Snowflakes, and Similar Shapes

✻	\Asterisk	✿	\FiveFlowerPetal	✢	\JackStar
✱	\AsteriskBold	★	\FiveStar	✤	\JackStarBold
✼	\AsteriskCenterOpen	☆	\FiveStarCenterOpen	❀	\SixFlowerAlternate
✽	\AsteriskRoundedEnds	☆	\FiveStarConvex	❀	\SixFlowerAltPetal
✳	\AsteriskThin	☆	\FiveStarLines	✼	\SixFlowerOpenCenter
✳	\AsteriskThinCenterOpen	☆	\FiveStarOpen	❀	\SixFlowerPetalDotted
✡	\DavidStar	✪	\FiveStarOpenCircled	✼	\SixFlowerPetalRemoved
✱	\DavidStarSolid	☆	\FiveStarOpenDotted	❀	\SixFlowerRemovedOpenPetal
✱	\EightAsterisk	☆	\FiveStarOutline	✶	\SixStar
❀	\EightFlowerPetal	☆	\FiveStarOutlineHeavy	✺	\SixteenStarLight
✼	\EightFlowerPetalRemoved	☆	\FiveStarShadow	❄	\Snowflake
✷	\EightStar	✢	\FourAsterisk	❄	\SnowflakeChevron
✸	\EightStarBold	☘	\FourClowerOpen	❄	\SnowflakeChevronBold
✷	\EightStarConvex	☘	\FourClowerSolid	✨	\Sparkle
✷	\EightStarTaper	✦	\FourStar	✨	\SparkleBold
❀	\FiveFlowerOpen	✧	\FourStarOpen	✹	\TwelweStar

Table 82: bbding Geometric Shapes

○	\CircleShadow	❖	\OrnamentDiamondSolid	❑	\SquareShadowBottomRight
●	\CircleSolid	▌	\Rectangle	❑	\SquareShadowTopLeft
◆	\DiamondSolid	▌	\RectangleBold	❑	\SquareShadowTopRight
⬭	\Ellipse	▌	\RectangleThin	■	\SquareSolid
⬭	\EllipseShadow	□	\Square	▼	\TriangleDown
⬬	\EllipseSolid	❑	\SquareCastShadowBottomRight	▲	\TriangleUp
◖	\HalfCircleLeft	❑	\SquareCastShadowTopLeft		
◗	\HalfCircleRight	❑	\SquareCastShadowTopRight		

Table 83: Other bbding Symbols

➡	\ArrowBoldDownRight	✓	\Checkmark	✆	\PhoneHandset
➲	\ArrowBoldRightCircled	✔	\CheckmarkBold	✈	\Plane
➡	\ArrowBoldRightShort	✉	\Envelope	✪	\SunshineOpenCircled
➠	\ArrowBoldRightStrobe	✌	\Peace	✇	\Tape
➡	\ArrowBoldUpRight	☎	\Phone		

Table 84: ifsym Weather Symbols

	\Blitz		\FilledWeakRainCloud		\Rain		\ThinFog
	\Cloud		\Fog		\RainCloud		\WeakRain
	\FilledCloud		\Graupel		\Snow		\WeakRainCloud
	\FilledRainCloud		\Hagel		\SnowCloud		
	\FilledSnowCloud		\HalfSun		\Sun		
	\FilledSunCloud		\NoSun		\SunCloud		

In addition, `\Thermo{0}`…`\Thermo{6}` produce thermometers that are between 0/6 and 6/6 full of mercury:

Similarly, `\wind{`⟨*sun*⟩`}{`⟨*angle*⟩`}{`⟨*strength*⟩`}` will draw wind symbols with a given amount of sun (0–4), a given angle (in degrees), and a given strength in km/h (0–100). For example, `\wind{0}{0}{0}` produces "", `\wind{2}{0}{0}` produces "", and `\wind{4}{0}{100}` produces "".

Table 85: ifsym Alpine Symbols

	\FilledHut		\Joch		\Tent		\Vermessung
	\Flag		\Mountain		\VarFlag		\Village
	\HalfFilledHut		\StoneMan		\VarIceMountain		
	\Hut		\Summit		\VarMountain		
	\IceMountain		\SummitSign		\VarSummit		

Table 86: ifsym Clocks

	\Interval		\StopWatchStart		\VarClock		\Wecker
	\StopWatchEnd		\Taschenuhr		\VarTaschenuhr		

ifsym also exports a `\showclock` macro. `\showclock{`⟨*hours*⟩`}{`⟨*minutes*⟩`}` outputs a clock displaying the corresponding time. For instance, "`\showclock{5}{40}`" produces "". ⟨*hours*⟩ must be an integer from 0 to 11, and ⟨*minutes*⟩ must be an integer multiple of 5 from 0 to 55.

Table 87: ifsym Geometric Shapes

○	\BigCircle	▶	\FilledBigTriangleRight	○	\SmallCircle
×	\BigCross	▲	\FilledBigTriangleUp	×	\SmallCross
◇	\BigDiamondshape	●	\FilledCircle	◇	\SmallDiamondshape
—	\BigHBar		\FilledDiamondShadowA	–	\SmallHBar
	\BigLowerDiamond		\FilledDiamondShadowC		\SmallLowerDiamond
	\BigRightDiamond	◆	\FilledDiamondshape		\SmallRightDiamond
□	\BigSquare	●	\FilledSmallCircle	□	\SmallSquare
▽	\BigTriangleDown	◆	\FilledSmallDiamondshape	▽	\SmallTriangleDown
◁	\BigTriangleLeft	■	\FilledSmallSquare	◁	\SmallTriangleLeft
▷	\BigTriangleRight	▼	\FilledSmallTriangleDown	▷	\SmallTriangleRight
△	\BigTriangleUp	◀	\FilledSmallTriangleLeft	△	\SmallTriangleUp
|	\BigVBar	▶	\FilledSmallTriangleRight	|	\SmallVBar
○	\Circle	▲	\FilledSmallTriangleUp	↓	\SpinDown
×	\Cross	■	\FilledSquare	↑	\SpinUp
	\DiamondShadowA		\FilledSquareShadowA	□	\Square
	\DiamondShadowB		\FilledSquareShadowC		\SquareShadowA
	\DiamondShadowC	▼	\FilledTriangleDown		\SquareShadowB
◇	\Diamondshape	◀	\FilledTriangleLeft		\SquareShadowC
●	\FilledBigCircle	▶	\FilledTriangleRight	▽	\TriangleDown
◆	\FilledBigDiamondshape	▲	\FilledTriangleUp	◁	\TriangleLeft
■	\FilledBigSquare	—	\HBar	▷	\TriangleRight
▼	\FilledBigTriangleDown		\LowerDiamond	△	\TriangleUp
◀	\FilledBigTriangleLeft		\RightDiamond	|	\VBar

The ifsym documentation points out that one can use `\rlap` to combine some of the above into useful, new symbols. For example, `\BigCircle` and `\FilledSmallCircle` combine to give "". Likewise, `\Square` and `\Cross` combine to give "". See Section 5.2 for more information about constructing new symbols out of existing symbols.

Table 88: Other ifsym Symbols

❖	`\FilledSectioningDiamond`	✉	`\Letter`	☘	`\Radiation`
🔥	`\Fire`	🗞	`\PaperLandscape`	❖	`\SectioningDiamond`
✕	`\Irritant`	🗎	`\PaperPortrait`	☎	`\Telephone`
	`\StrokeOne`		`\StrokeThree`		`\StrokeFive`
	`\StrokeTwo`		`\StrokeFour`		

In addition, `\Cube{1}`…`\Cube{6}` produce dice with the corresponding number of spots: ⚀ ⚁ ⚂ ⚃ ⚄ ⚅

5 Additional Information

Unlike the previous sections of this document, Section 5 does not contain lists of symbols. Rather, it provides additional help in using the Comprehensive LaTeX Symbol List. First, it makes a few points about symbol names used by multiple packages. Then, it provides some guidelines for finding symbols and gives some examples regarding how to construct missing symbols out of existing ones. Next, it comments on spacing around symbols in math mode. And finally, it lists some statistics about this document itself.

5.1 Symbol Name Clashes

Unfortunately, a number of symbol names are not unique; they appear in more than one package. Depending on how the symbols are defined in each package, LaTeX will either output an error message or replace an earlier-defined symbol with a later-defined symbol. Table 89 lists the name clashes that appear in this document. The symbol "N/A" is used to indicate that the corresponding package was not available when `symbols.tex` was compiled.

Table 89: Symbol Name Clashes

Symbol	LaTeX 2ε	AMS	stmaryrd	wasysym	marvosym	bbding	ifsym
`\angle`	∠	∠					
`\bigtriangledown`	▽		⨄				
`\bigtriangleup`	△		⨄				
`\Circle`				○			○
`\Cross`					†	✝	×
`\Letter`					✉		✉
`\lightning`			↯	↯			
`\Rightarrow`	⇒				➔		
`\rightleftharpoons`	⇌	⇌					
`\Square`				□		□	□
`\Sun`					⊙		☼
`\TriangleDown`						▼	▽
`\TriangleUp`						▲	△

Using multiple symbols with the same name in the same document—or even merely loading conflicting symbol packages—can be tricky, but, as evidenced by this document, not impossible. The general procedure is to load the first package, rename the conflicting symbols, and then load the second package. Examine the LaTeX source for this document—especially the `\savesymbol` and `\restoresymbol` macros and their subsequent usage—to see one possible way to handle symbol conflicts.

txfonts and pxfonts redefine a huge number of symbols—essentially, all the symbols defined by latexsym, textcomp, the various AMS symbol sets, and LaTeX 2ε itself. The txfonts and pxfonts conflicts are not listed in Table 89 because they are designed to be compatible with the symbols they replace. Table 90 illustrates what "compatible" means in this context.

Table 90: Example of a Benign Name Clash

Symbol	Default (Computer Modern)	txfonts (Times Roman)
`R`	R	R
`\textrecipe`	℞	℞

To use the new txfonts/pxfonts symbols without altering the document's main font, merely reset the default font families back to their original values after loading one of those packages:

```
\renewcommand\rmdefault{cmr}
```

```
\renewcommand\sfdefault{cmss}
\renewcommand\ttdefault{cmtt}
```

5.2 Where can I find the symbol for ... ?

If you can't find some symbol you're looking for in this document, there are a few possible explanations:

- The symbol isn't intuitively named. As a few examples, the command to draw dice is "`\Cube`"; a plus sign with a circle around it ("exclusive or" to computer engineers) is "`\oplus`"; and lightning bolts in fonts designed by German speakers may have "blitz" in their names. The moral of the story is to be creative with synonyms when searching the index.
- The symbol is defined by some package that was overlooked (or deemed unimportant) by the authors of this document. If there's some symbol package you think should be included in the Comprehensive LaTeX Symbol List, please send e-mail to the address listed on the title page.
- The symbol isn't defined in any package whatsoever.

Even in the last case, all is not lost; some symbols can be fabricated out of existing symbols. The LaTeX 2_ε source file called `fontdef.dtx` contains a number of such definitions. For example, `\models` (see Table 13 on page 10) is defined in that file with:

```
\def\models{\mathrel|\joinrel=}
```

where `\mathrel` and `\joinrel` are used to control the horizontal spacing. (See The TeXbook [Knu86] for more information on those commands.)

With some simple pattern-matching, one can easily define a backward `\models` sign ("⫤"):

```
\def\ismodeledby{=\joinrel\mathrel|}
```

As another example, `fontdef.dtx` composes the `\ddots` symbol (see Table 16 on page 11) out of three periods, raised 7 pt., 4 pt., and 1 pt., respectively:

```
\def\ddots{\mathinner{\mkern1mu\raise7\p@
    \vbox{\kern7\p@\hbox{.}}\mkern2mu
    \raise4\p@\hbox{.}\mkern2mu\raise\p@\hbox{.}\mkern1mu}}
```

`\p@` is a LaTeX 2_ε shortcut for "`pt`" or "`1.0pt`". The remaining commands are defined in The TeXbook [Knu86]. To draw a version of `\ddots` with the dots going along the opposite diagonal, we merely have to reorder the `\raise7\p@`, `\raise4\p@`, and `\raise\p@`:

```
\makeatletter
\def\revddots{\mathinner{\mkern1mu\raise\p@
    \vbox{\kern7\p@\hbox{.}}\mkern2mu
    \raise4\p@\hbox{.}\mkern2mu\raise7\p@\hbox{.}\mkern1mu}}
\makeatother
```

(The `\makeatletter` and `\makeatother` commands are needed to coerce LaTeX into accepting "`@`" as part of a macro name.)

As a final example of creating new symbols out of existing ones, the following code defines a principal value integral symbol, which is an integral sign with a line through it:

```
\def\Xint#1{\mathchoice
   {\XXint\displaystyle\textstyle{#1}}%
   {\XXint\textstyle\scriptstyle{#1}}%
   {\XXint\scriptstyle\scriptscriptstyle{#1}}%
   {\XXint\scriptscriptstyle\scriptscriptstyle{#1}}%
   \!\int}
\def\XXint#1#2#3{{\setbox0=\hbox{$#1{#2#3}{\int}$}
     \vcenter{\hbox{$#2#3$}}\kern-.5\wd0}}
\def\ddashint{\Xint=}
\def\dashint{\Xint-}
```

`\dashint` produces a single-dashed integral sign ("$\fint$"), while `\ddashint` produces a double-dashed one ("$\ffint$"). The same technique can be used to produce, for example, clockwise and counterclockwise contour integrals. (Search the `comp.text.tex` archives for a post by Donald Arseneau that says exactly how.) The preceding code was taken verbatim from the UK TEX Users' Group FAQ (`http://www.tex.ac.uk/faq`).

5.3 Math-mode spacing

Terms such as "binary operators", "relations", and "punctuation" in Section 2 primarily regard the surrounding spacing. (See the Short Math Guide for LATEX [Dow00] for a nice exposition on the subject.) To use an symbol for a different purpose, you can use the TEX commands `\mathord`, `\mathop`, `\mathbin`, `\mathrel`, `\mathopen`, `\mathclose`, and `\mathpunct`. For example, if you want to use `\downarrow` as a variable (an "ordinary" symbol) instead of a delimiter, you can write "`$3 x + \mathord{\downarrow}$`" to get the properly spaced "$3x + \downarrow$" rather than the awkward-looking "$3x+ \downarrow$". See The TEXbook [Knu86] for more information.

The purpose of the "log-like symbols" in Tables 18 and 29 is to provide the correct amount of spacing around and within multiletter function names. Table 91 contrasts the output of the log-like symbols with various, naïve alternatives. In addition to spacing, the log-like symbols also handle subscripts properly. For example, "`\max_{p \in P}`" produces "$\max_{p\in P}$" in text, but "$\max\limits_{p\in P}$" as part of a displayed formula.

Table 91: Spacing Around/Within Log-like Symbols

LATEX expression	Output
`$r \sin \theta$`	$r \sin \theta$ (best)
`$r sin \theta$`	$r sin\theta$
`$r \mbox{sin} \theta$`	$r\mathrm{sin}\theta$

5.4 ASCII quick reference

Table 92 on the following page amalgamates data from various other tables in this document into a convenient reference for LATEX 2_ε typesetting of ASCII characters, i.e., the characters available on a typical[2] computer keyboard. The first two columns list the character's ASCII code in decimal and hexadecimal. The third column shows what the character looks like. The fourth column lists the LATEX 2_ε command to typeset the character as a text character. And the fourth column lists the LATEX 2_ε command to typeset the character within a `\texttt{...}` command (or, more generally, when `\ttfamily` is in effect).

The following are some additional notes about the contents of Table 92:

- `\textquotedbl` is not available in the OT1 font encoding.
- The characters "`<`", "`>`", and "`|`" do work properly in math mode. Hence, instead of using `\textless`, `\textgreater`, and `\textbar`, an alternative is to use `$<$`, `$>$`, and `$|$`. Note that for typesetting metavariables, many people prefer `\textlangle` and `\textrangle` to `\textless` and `\textgreater`, i.e., "⟨*filename*⟩" versus "<*filename*>".
- The various `\char` commands within `\texttt` are necessary only in the OT1 font encoding. Using other encodings (e.g., T1), commands such as `\^`, `\_`, `\{`, `\}`, and `\~` all work properly.
- `\textasciicircum` can be used instead of `\^{}`, and `\textasciitilde` can be used instead of `\~{}`. For typesetting tildes in URLs and Unix filenames, some people prefer `\sim` (see Table 13 on page 10), which produces a larger symbol. But if you don't mind the tilde produced by `\~{}`, you should use the `url` package to typeset URLs—it has a number of nice features.

5.5 About this document

Table 93 on the following page lists some of this document's build characteristics. Most important is the list of packages that LATEX couldn't find, but that `symbols.tex` otherwise would have been able to take advantage of. Complete, prebuilt versions of this document are available from CTAN (`http://www.ctan.org`) in the directory `info/symbols/comprehensive`.

[2] typical for the United States, at least

Table 92: LaTeX 2_ε ASCII Table

Dec	Hex	Char	Body text	\texttt
33	21	!	!	!
34	22	"	\textquotedbl	"
35	23	#	\#	\#
36	24	$	\$	\$
37	25	%	\%	\%
38	26	&	\&	\&
39	27	'	'	'
40	28	(	(	(
41	29	)	)	)
42	2A	*	*	*
43	2B	+	+	+
44	2C	,	,	,
45	2D	-	-	-
46	2E	.	.	.
47	2F	/	/	/
48	30	0	0	0
49	31	1	1	1
50	32	2	2	2
⋮	⋮	⋮	⋮	⋮
57	39	9	9	9
58	3A	:	:	:
59	3B	;	;	;
60	3C	<	\textless	<
61	3D	=	=	=
62	3E	>	\textgreater	>
63	3F	?	?	?
64	40	@	@	@
65	41	A	A	A
66	42	B	B	B
67	43	C	C	C
⋮	⋮	⋮	⋮	⋮
90	5A	Z	Z	Z
91	5B	[	[	[
92	5C	\	\textbackslash	\char`\\
93	5D	]	]	]
94	5E	^	\^{}	\^{}
95	5F	_	_	\char`_
96	60	`	`	`
97	61	a	a	a
98	62	b	b	b
99	63	c	c	c
⋮	⋮	⋮	⋮	⋮
122	7A	z	z	z
123	7B	{	\{	\char`\{
124	7C	|	\textbar	|
125	7D	}	\}	\char`\}
126	7E	~	\~{}	\~{}

Table 93: Document Characteristics

Characteristic	Value
Source file:	symbols.tex
Build date:	March 14, 2001
Symbols documented:	2013
Packages included:	textcomp latexsym amssymb stmaryrd euscript wasysym pifont marvosym manfnt bbding ifsym tipa ulsy ar txfonts yfonts mathrsfs zapfchan bbold dsfont bbm
Packages omitted:	*none*

References

[Dow00] Michael Downes. Short math guide for LaTeX, July 19, 2000. Version 1.07. Available from `http://www.ams.org/tex/short-math-guide.html`.

[Knu86] Donald E. Knuth. *The TeXbook*, volume A of *Computers and Typesetting*. Addison-Wesley, Reading, MA, USA, 1986.

Index

If you're having trouble locating a symbol, try looking under "T" for "\text...". Many text-mode commands begin with that prefix.

Symbols

\" 5
\# 4, 33
\$ 4, 33
\% 4, 33
\& 4, 33
\' 5
(. 12
) 12
, ... 10
\. 5
/ 12
; 10
[. 12
] 12
\^ 5, 32
_ 4, 32
\` 5
\~ 5, 32

A

\AA 4
\aa 4
\AC 21
accents 5, 12
\acute 12
\AE 4
\ae 4
\agemO 23
airplane 23
\aleph 11, 14
\alpha 13
alphabets
  Greek 13, 14, 18
  Hebrew 14
  math 20
  phonetic 8
\alphaup 18
alpine symbols 27
\amalg 10
AMS 13–15, 30
amsfonts 10, 11, 20
amsmath 14
amssymb 10, 11, 20, 33
\angle 11, 14, 30
\Anglesign 19
\Ankh 25
APL
  modifiers 21
  symbols 21
\APLbox 21
\APLcirc 21
\APLcomment 21
\APLdown 21
\APLdownarrowbox 21
\APLinput 21
\APLinv 21
\APLleftarrowbox 21
\APLlog 21
\APLminus 21
\APLnot 21
\APLrightarrowbox 21
\APLstar 21
\APLup 21
\APLuparrowbox 21
\APLvert 21
\apprge 17
\apprle 17
\approx 10
\approxeq 15
\Aquarius 22
\AR 19
ar 19, 33
\arccos 12
\arcsin 12
\arctan 12
\arg 12
\Aries 22
\ArrowBoldDownRight 27
\ArrowBoldRightCircled . . . 27
\ArrowBoldRightShort 27
\ArrowBoldRightStrobe . . . 27
\ArrowBoldUpRight 27
arrowheads 23
\Arrownot 16
\arrownot 16
arrows 11, 13, 16, 23, 27
  negated 13
\Arrowvert 12
\arrowvert 12
ASCII 4, 32
  table 33
\ascnode 21
aspect ratio 19
\ast 10
\Asterisk 26
\AsteriskBold 26
\AsteriskCenterOpen 26
\AsteriskRoundedEnds 26
asterisks 23, 26
\AsteriskThin 26
\AsteriskThinCenterOpen . . 26
astrological symbols 22
astronomical symbols . . . 21, 22
\astrosun 21
\asymp 10
\ataribox 23
\AtForty 25
\AtNinetyFive 25
\AtSixty 25

B

\b 5
\backepsilon 15
\backprime 14
\backsim 15
\backsimeq 15
\backslash 11, 12
\bar 12
\baro 16
bars 23
\barwedge 14
\Bat 25
\Bbbk 14
bbding 26, 27, 30, 33
bbm 20, 33
bbold 20, 33
\bbslash 16
\Beam 21
\Bearing 21
\because 15
\bell 23
\beta 13
\betaup 18
\beth 14
\between 15
\Bicycle 24
\bigbox 16
\bigcap 11
\bigcirc 10
\BigCircle 28
\BigCross 28
\bigcup 11
\bigcurlyvee 16
\bigcurlywedge 16
\BigDiamondshape 28
\BigHBar 28
\biginterleave 16
\BigLowerDiamond 28
\bignplus 16
\bigodot 11
\bigoplus 11
\bigotimes 11
\bigparallel 16
\BigRightDiamond 28
\bigsqcap 16
\bigsqcapplus 19
\bigsqcup 11
\bigsqcupplus 19
\BigSquare 28
\bigstar 14
\BigTriangleDown 28
\bigtriangledown . . . 10, 16, 30
\BigTriangleLeft 28
\BigTriangleRight 28
\BigTriangleUp 28
\bigtriangleup 10, 16, 30
\biguplus 11
\BigVBar 28
\bigvee 11
\bigwedge 11
\binampersand 16
binary operators . 10, 14, 16, 17
binary relations 15–17

negated 15, 17
\bindnasrepma 16
\Biohazard 22
biological symbols 21
\blacklozenge 14
\blacksmiley 23
\blacksquare 14
\blacktriangle 14
\blacktriangledown 14
\blacktriangleleft 15
\blacktriangleright 15
\Bleech 25
\Blitz 27
\blitza 19
\blitzb 19
\blitzc 19
\blitzd 19
\blitze 19
\bot 11
\Bouquet 25
\Bowtie 23
\bowtie . . . . . *see* \lrtimes
\bowtie 10
\Box . . . . . *see* \square
\Box 11, 17
\boxast 16
\boxbar 16
\boxbox 16
\boxbslash 16
\boxcircle 16
\boxdot 14, 16
\boxdotLeft 17
\boxdotleft 17
\boxdotRight 17
\boxdotright 17
\boxempty 16
\boxLeft 17
\boxleft 17
\boxminus 14
\boxplus 14
\boxRight 17
\boxright 17
\boxslash 16
\boxtimes 14
\bracevert 12
\breve 12
\brokenvert 23
\BSEfree 22
\bullet 10
bullets 23
\Bumpeq 15
\bumpeq 15

C

\c 5
\Cancer 22
\Cap 14
\cap 10
\Capricorn 22
cardinality . . . . . *see* \aleph
\cdot 10
\cdotp 10
\cdots 11
\Celtcross 25
\cent 23
\centerdot 14
\CEsign 22
\check 12
\checked 23
\CheckedBox 23
\Checkedbox 24
\Checkmark 27
\checkmark 14
\CheckmarkBold 27
\chi 13
\chiup 18
\circ 10
\circeq 15
\CIRCLE 23
\Circle 23, 28, 30
\circlearrowleft 13
\circlearrowright 13
\CircledA 25
\circledast 14
\circledbar 17
\circledbslash 17
\circledcirc 14
\circleddash 14
\circleddot . . . . . *see* \odot
\circleddotleft 17
\circleddotright 17
\circledgtr 17
\circledless 17
\circledminus . . . *see* \ominus
\circledotleft . . . . . *see* \circleddotleft
\circledotright . . . . . *see* \circleddotright
\circledplus . . . . . *see* \oplus
\circledR 14
\circledS 14
\circledslash . . . *see* \oslash
\circledtimes . . . *see* \otimes
\circledvee 17
\circledwedge 17
\circleleft 17
\circleright 17
circles 23, 27, 28
\CircleShadow 27
\CircleSolid 27
\Circpipe 21
\Circsteel 21
\CleaningA 25
\CleaningF 25
\CleaningFF 25
\CleaningP 25
\CleaningPP 25
\clock 23
clock symbols 28
\Clocklogo 24
\Cloud 27
clovers 26
clubs (suit) 23
\clubsuit 11
\Coffeecup 24
\colon 10
\Colonapprox 17
\colonapprox 17
\Coloneq 17
\coloneq 17
\Coloneqq 18
\coloneqq 17
\Colonsim 18
\colonsim 18
communication symbols 22
comp.text.tex 32
\complement 14
complex numbers *see* alphabets, math
Comprehensive TEX Archive Network . . . . . *see* CTAN
computer hardware symbols . 22
\ComputerMouse 22
\cong 10
contradiction symbols 19
\coprod 11
\copyright 4
\Corresponds 19
\cos 12
\cosh 12
\cot 12
\coth 12
Courier 9
\Cross 25, 26, 28, 30
\CrossBoldOutline 26
\CrossClowerTips 26
\Crossedbox 24
crosses 23, 26
\CrossMaltese 26
\CrossOpenShadow 26
\CrossOutline 26
\csc 12
CTAN 1, 32
\Cube 29, 31
\Cup 14
\cup 10
\curlyeqprec 15
\curlyeqsucc 15
\curlyvee 14
\curlyveedownarrow 16
\curlyveeuparrow 16
\curlywedge 14
\curlywedgedownarrow 16
\curlywedgeuparrow 16
\currency 23
currency symbols 9
\curvearrowleft 13
\curvearrowright 13
\Cutleft 24
\Cutline 24
\Cutright 24

D

\d 5
\dag 4
\dagger 10
\daleth 14
dangerous bend symbols . . . 25

\dasharrow . . . . . *see* \dashrightarrow
\dashint 32
\dashleftarrow 13
\dashleftrightarrow 18
\dashrightarrow 13
\dashv 10
\davidsstar 23
\DavidStar 26
\DavidStarSolid 26
\dbend 25
\ddag 4
\ddagger 10
\ddashint 32
\ddot 12
\ddots 11, 31
\deg 12
degrees . . . . . *see* \textdegree
\Deleatur 9
delimiters 13, 15
variable-sized 12
\Delta 13
\delta 13
\deltaup 18
\Denarius 9
\descnode 21
\det 12
\DH 4, 8
\dh 4, 8
\diagdown 14
\diagup 14
\diameter 23
\Diamond 11, 17
diamond 23
\diamond 10
\Diamondblack 19
\Diamonddot 19
\DiamonddotLeft 18
\Diamonddotleft 18
\DiamonddotRight 18
\Diamonddotright 18
\DiamondLeft 18
\Diamondleft 18
\DiamondRight 18
\Diamondright 18
diamonds 28
diamonds (suit) 23
\DiamondShadowA 28
\DiamondShadowB 28
\DiamondShadowC 28
\Diamondshape 28
\DiamondSolid 27
\diamondsuit 11
dice 29, 31
dictionary symbols . *see* phonetic symbols
\digamma 14
digits 23
old-style 7
\dim 12
\ding 23, 24
dingbats 23
\div 10
\divideontimes 14
\DJ 4
\dj 4
\Dontwash 25
\dot 12
\Doteq . . . . . *see* \doteqdot
\doteq 10
\doteqdot 15
\dotplus 14
\dots 4
\doublebarwedge 14
\doublecap . . . . . *see* \Cap
\doublecup . . . . . *see* \Cup
\DOWNarrow 23
\Downarrow 11, 12
\downarrow 11, 12, 32
\downdownarrows 13
\downharpoonleft 13
\downharpoonright 13
dsfont 20, 33

E

\Earth 22
\earth 21
\Ecommerce 9
\EightAsterisk 26
\EightFlowerPetal 26
\EightFlowerPetalRemoved . 26
\eighthnote 23
\EightStar 26
\EightStarBold 26
\EightStarConvex 26
\EightStarTaper 26
electrical symbols 21
\ell 11
\Ellipse 27
ellipses 27
\EllipseShadow 27
\EllipseSolid 27
\Email 22
\Emailct 22
\emptyset 11
engineering symbols 21, 22
\Envelope 27
envelope 23
\epsilon 13
\epsilonup 18
\eqcirc 15
\Eqcolon 18
\eqcolon 18
\Eqqcolon 18
\eqqcolon 18
\eqsim 18
\eqslantgtr 15
\eqslantless 15
\equiv 10
escapable characters 4
\Estatically 22
\eta 13
\etaup 18
\eth 14
eufrak 20
\EUR 9
\EURcr 9
\EURdig 9
\EURhv 9
euro signs 6, 9
\EURtm 9
euscript 20, 33
exclusive or 31
\exists 11
\exp 12
\Explosionsafe 22
extensions 16
\EyesDollar 9

F

\fallingdotseq 15
\FallingEdge 22
\fatbslash 16
\fatsemi 16
\fatslash 16
\FAX 22
\fax 22
\Faxmachine 22
\FEMALE 21
\Female 21
\female 23
\FemaleFemale 21
\FemaleMale 21
\FHBOLOGO 25
\FHBOlogo 25
\FilledBigCircle 28
\FilledBigDiamondshape . . . 28
\FilledBigSquare 28
\FilledBigTriangleDown . . . 28
\FilledBigTriangleLeft . . . 28
\FilledBigTriangleRight . . 28
\FilledBigTriangleUp 28
\FilledCircle 28
\FilledCloud 27
\FilledDiamondShadowA . . . 28
\FilledDiamondShadowC . . . 28
\FilledDiamondshape 28
\FilledHut 27
\FilledRainCloud 27
\FilledSectioningDiamond . 29
\FilledSmallCircle 28
\FilledSmallDiamondshape . 28
\FilledSmallSquare 28
\FilledSmallTriangleDown . 28
\FilledSmallTriangleLeft . 28
\FilledSmallTriangleRight 28
\FilledSmallTriangleUp . . . 28
\FilledSnowCloud 27
\FilledSquare 28
\FilledSquareShadowA 28
\FilledSquareShadowC 28
\FilledSunCloud 27
\FilledTriangleDown 28
\FilledTriangleLeft 28
\FilledTriangleRight 28
\FilledTriangleUp 28
\FilledWeakRainCloud 27
\fint 19
\Finv 14

\Fire 29
\FiveFlowerOpen 26
\FiveFlowerPetal 26
\FiveStar 26
\FiveStarCenterOpen 26
\FiveStarConvex 26
\FiveStarLines 26
\FiveStarOpen 26
\FiveStarOpenCircled 26
\FiveStarOpenDotted 26
\FiveStarOutline 26
\FiveStarOutlineHeavy . . . 26
\FiveStarShadow 26
\Fixedbearing 21
\Flag 27
\flat 11, 23
\Flatsteel 21
florettes 23
flowers 26
\Fog 27
fontdef.dtx 31
fontenc 4, 5
\Football 24
\forall 11
\Force 21
\Forward 24
\ForwardToEnd 24
\ForwardToIndex 24
\FourAsterisk 26
\FourClowerOpen 26
\FourClowerSolid 26
Fourier transform *see* alphabets, math
\FourStar 26
\FourStarOpen 26
\frown 10
\frownie 23
\Frowny 25
\FullFHBO 25
\fullmoon 21
\fullnote 23

G

\Game 14
\Gamma 13
\gamma 13
\gammaup 18
\gcd 12
\ge . . . . . *see* \geq
\Gemini 22
geneological symbols 6
\Gentsroom 24
geometric shapes 27, 28
\geq 10
\geqq 15
\geqslant 15
\gets . . . . . *see* \leftarrow
\gg 10
\ggg 15
\gggtr . . . . . *see* \ggg
\gimel 14
\gluon 21
\gnapprox 15
\gneq 15
\gneqq 15
\gnsim 15
\Graupel 27
\grave 12
Greek 13, 14, 18
\gtrapprox 15
\gtrdot 15
\gtreqless 15
\gtreqless 15
\gtrless 15
\gtrsim 15
\guillemotleft 5
\guillemotright 5
\guilsinglleft 5
\guilsinglright 5
\gvertneqq 15

H

\H 5
\Hagel 27
\HalfCircleLeft 27
\HalfCircleRight 27
\HalfFilledHut 27
\halfnote 23
\HalfSun 27
\HandCuffLeft 26
\HandCuffLeftUp 26
\HandCuffRight 26
\HandCuffRightUp 26
\HandLeft 26
\HandLeftUp 26
\HandPencilLeft 26
\HandRight 26
\HandRightUp 26
hands 23, 26
\Handwash 25
\hat 12
\HBar 28
\hbar 11, 14
\Heart 25
hearts 23
hearts (suit) 23
\heartsuit 11
Hebrew 14
Helvetica 9
\HERMAPHRODITE 21
\Hermaphrodite 21
\hexagon 23
\Hexasteel 21
\hexstar 23
\HF 21
Hilbert space . . . *see* alphabets, math
\hom 12
\hookleftarrow 11
\hookrightarrow 11
\hslash 14
\Hut 27

I

\i 5
\IceMountain 27
\idotsint 19
ifsym 22, 27–30, 33
\iiiint 19
\iiint 17, 19
\iint 17, 19
\Im 11
imaginary numbers . . . . . *see* alphabets, math
\imath 11, 12
\in 10
indexes 23
\Industry 24
\inf 12
\Info 24
information symbols 24
\infty 11
\injlim 14
\inplus 16
\int 11
integers . . . *see* alphabets, math
integrals 11, 17, 19, 31–32
\intercal 14
\interleave 16
\Interval 28
\invamp 17
\invdiameter 23
\inve 8
\invneg 17
\iota 13
\iotaup 18
\IroningI 25
\IroningII 25
\IroningIII 25
\Irritant 29
\ismodeledby 31

J

\j 5
\JackStar 26
\JackStarBold 26
\jmath 11, 12
\Joch 27
\Join 10, 17
\joinrel 31
\Jupiter 22
\jupiter 21

K

\k 5
\kappa 13
\kappaup 18
\ker 12
\Keyboard 22
Knuth 25
\kreuz 23
\Kutline 24

L

\L 4
\l 4
\Ladiesroom 24
Lagrangian *see* alphabets, math
\Lambda 13
\lambda 13

\lambdabar 19
\lambdaslash 19
\lambdaup 18
\land . . . . . *see* \wedge
\langle 12
Laplace transform *see* alphabets, math
\Laserbeam 22
LaTeX 2ε 1, 4, 7, 10, 11, 25, 30–33
latexsym 10, 11, 30, 33
laundry symbols 25
\Lbag 15
\lbag 15
\lceil 12
\ldotp 10
\ldots 11
\le . . . . . *see* \leq
\leadsto 11, 17
\left 12
\LEFTarrow 23
\Leftarrow 11
\leftarrow 11
\leftarrowtail 13
\leftarrowtriangle 16
\LEFTCIRCLE 23
\LEFTcircle 23
\Leftcircle 23
\leftharpoondown 11
\leftharpoonup 11
\leftleftarrows 13
\leftmoon 21
\Leftrightarrow 11
\leftrightarrow 11
\leftrightarroweq 16
\leftrightarrows 13
\leftrightarrowtriangle . . 16
\leftrightharpoons 13
\leftrightsquigarrow 13
\Leftscissors 24
\leftslice 16
\leftsquigarrow 18
\leftthreetimes 14
\Lefttorque 21
\leftturn 23
\Leo 22
\leq 10
\leqq 15
\leqslant 15
\lessapprox 15
\lessdot 15
\lesseqgtr 15
\lesseqgtr 15
\lessgtr 15
\lesssim 15
\Letter 22, 29, 30
letters . . . . . *see* alphabets
non-ASCII 4
variant Latin 18
\lfloor 12
\lg 12
\lgroup 12
\LHD 17
\lhd 10, 17
\lhdbend 25
\Libra 22
\Lightning 22
\lightning 16, 23, 30
\lim 12
\liminf 12
\limsup 12
\Lineload 21
linguistic symbols 8
\lJoin 18
\ll 10
\llbracket 15
\llceil 15
\llcorner 13
\Lleftarrow 13
\llfloor 15
\lll 15
\llless . . . . . *see* \lll
\lmoustache 12
\ln 12
\lnapprox 15
\lneq 15
\lneqq 15
\lnot . . . . . *see* \neg
\lnsim 15
\log 12
log-like symbols 12, 14
\logof 17
\Longleftarrow 11
\longleftarrow 11
\Longleftrightarrow . . 11, 25
\longleftrightarrow 11
\Longmapsfrom 16
\longmapsfrom 16
\Longmapsto 16
\longmapsto 11
\LongPulseHigh 22
\LongPulseLow 22
\Longrightarrow 11
\longrightarrow 11
\looparrowleft 13
\looparrowright 13
\Loosebearing 21
\lor . . . . . *see* \vee
\LowerDiamond 28
\lozenge 14
\lrcorner 13
\lrJoin . . . . . *see* \Join
\lrtimes 17
\Lsh 13
\Lsteel 21
\ltimes 14
\lvertneqq 15

M

majuscules 13
\makeatletter 31
\makeatother 31
\MALE 21
\Male 21
\male 23
\MaleMale 21
\maltese 14
\manboldkidney 25
\manconcentriccircles . . . 25
\manconcentricdiamond . . . 25
\mancone 25
\mancube 25
\manerrarrow 25
\manfilledquartercircle . . 25
manfnt 25, 33
\manhpennib 25
\manimpossiblecube 25
\mankidney 25
\manlhpenkidney 25
\manpenkidney 25
\manquadrifolium 25
\manquartercircle 25
\manrotatedquadrifolium . . 25
\manrotatedquartercircle . 25
\manstar 25
\mantiltpennib 25
\mantriangledown 25
\mantrianglerright 25
\mantriangleup 25
\manvpennib 25
\Mappedfromchar 17
\mappedfromchar 17
\Mapsfrom 16
\mapsfrom 16
\Mapsfromchar 16
\mapsfromchar 16
\Mapsto 16
\mapsto 11
\Mapstochar 16
marks 23
\Mars 22
\mars 21
\MartinVogel 25
marvosym . 9, 19, 21, 22, 24, 25, 30, 33
math alphabets 20
math-mode symbols 17
\mathbb 20
\mathbbm 20
\mathbbmss 20
\mathbbmtt 20
\mathbin 32
mathcal 20
\mathcal 20
\mathcent 19
\mathclose 32
mathcomp 7
mathcr 20
\mathds 20
mathematical symbols 10
\mathfrak 20
\mathit 20
\mathnormal 20
\mathop 32
\mathopen 32
\mathord 32
\mathpunct 32
\mathpzc 20
\mathrel 31, 32
\mathrm 20

mathrsfs 20, 33
\mathscr 20
\mathsterling 19
\max 12
\measuredangle 14
\medbullet 17
\medcirc 17
\Mercury 22
\mercury 21
\merge 16
METAFONTbook symbols . . . 25
\mho 11, 14, 17
\mid 10
\min 12
\minuso 16
miscellaneous symbols 11, 14, 19, 23, 25, 27, 29
\Mmappedfromchar 17
\mmappedfromchar 17
\Mmapstochar 17
\mmapstochar 17
\Mobilefone 22
\models 10, 31
\moo 16
\Moon 22
\Mountain 27
\MoveDown 24
\MoveUp 24
\mp 10
\mu 13
\multimap 13
\multimapboth 17
\multimapbothvert 17
\multimapdot 17
\multimapdotboth 17
\multimapdotbothA 17
\multimapdotbothAvert . . . 17
\multimapdotbothB 17
\multimapdotbothBvert . . . 17
\multimapdotbothvert 17
\multimapdotinv 17
\multimapinv 17
\Mundus 25
musical notes 23
\muup 18
\MVAt 25
\MVEight 19
\MVFive 19
\MVFour 19
\MVNine 19
\MVOne 19
\MVSeven 19
\MVSix 19
\MVThree 19
\MVTwo 19
\MVZero 19

N

\nabla 11
\napproxeq 17
\nasymp 18
\natural 11, 23
natural numbers *see* alphabets, math
navigation symbols 24
\nbacksim 18
\nbacksimeq 18
\nBumpeq 18
\nbumpeq 18
\ncong 15
\ne . . . . . *see* \neq
\Nearrow 18
\nearrow 11
\neg 11
\Neptune 22
\neptune 21
\neq 10
\nequiv 18
\Neutral 21
\newmoon 21
\newtie 5
\nexists 14
\NG 4
\ng 4
\ngeq 15
\ngeqq 15
\ngeqslant 15
\ngg 18
\ngtr 15
\ngtrapprox 18
\ngtrless 18
\ngtrsim 18
\ni 10
\NibLeft 26
\NibRight 26
nibs 23, 26
\NibSolidLeft 26
\NibSolidRight 26
\niplus 16
\nLeftarrow 13
\nleftarrow 13
\nLeftrightarrow 13
\nleftrightarrow 13
\nleq 15
\nleqq 15
\nleqslant 15
\nless 15
\nlessapprox 18
\nlessgtr 18
\nlesssim 18
\nll 18
\nmid 15
\nnearrow 16
\nnwarrow 16
\NoBleech 25
\NoChemicalCleaning 25
\NoIroning 25
\NoSun 27
\notbackslash 21
\notin 18
\notni 18
\notowns . . . . . *see* \notni
\notslash 21
\NoTumbler 25
\nparallel 15
\nplus 16
\nprec 15
\nprecapprox 18
\npreccurlyeq 18
\npreceq 15
\npreceqq 17
\nprecsim 17
\nRightarrow 13
\nrightarrow 13
\nshortmid 15
\nshortparallel 15
\nsim 15
\nsimeq 17
\nsqsubset 17
\nsqsubseteq 17
\nsqsupset 17
\nsqsupseteq 17
\nSubset 17
\nsubseteq 15
\nsubseteqq 17
\nsucc 15
\nsuccapprox 17
\nsucccurlyeq 17
\nsucceq 15
\nsucceqq 17
\nsuccsim 17
\nSupset 17
\nsupseteq 15
\nsupseteqq 15
\nthickapprox 17
\ntriangleleft 15
\ntrianglelefteq 15
\ntrianglelefteqslant . . . 17
\ntriangleright 15
\ntrianglerighteq 15
\ntrianglerighteqslant . . . 17
\ntwoheadleftarrow 17
\ntwoheadrightarrow 17
\nu 13
number sets *see* alphabets, math
\nuup 18
\nvarparallel 17
\nvarparallelinv 17
\nVDash 15
\nVdash 18
\nvDash 15
\nvdash 15
\Nwarrow 18
\nwarrow 11

O

\O 4
\o 4
o 13
\obar 16
\oblong 16
\obslash 16
\ocircle 17
\octagon 23
\Octosteel 21
\odot 10
\odplus 19
\OE 4

\oe 4
\ogreaterthan 16
\oiint 19
\oiintclockwise 19
\oiintctrclockwise 19
\oint 17, 19
\ointclockwise 19
\ointctrclockwise 19
old-style digits 7
\oldstylenums 7
\olessthan 16
\Omega 13
\omega 13
\omegaup 18
\ominus 10
\openJoin 18
\openo 8
\opentimes 18
operators
  binary 10, 14, 16, 17
\oplus 10, 31
\OrnamentDiamondSolid . . . 27
ornaments 23
\oslash 10
\otimes 10
\ovee 16
\overbrace 13
\overleftarrow 13
\overline 13
\overrightarrow 13
\owedge 16
\owns . . . . . *see* \ni

P

\P 4
\p@ 31
packages
  amsfonts 10, 11, 20
  amsmath 14
  amssymb . . . 10, 11, 20, 33
  ar 19, 33
  bbding 26, 27, 30, 33
  bbm 20, 33
  bbold 20, 33
  dsfont 20, 33
  eufrak 20
  euscript 20, 33
  fontenc 4, 5
  ifsym 22, 27–30, 33
  latexsym 10, 11, 30, 33
  manfnt 25, 33
  marvosym . 9, 19, 21, 22, 24, 25, 30, 33
  mathcomp 7
  mathrsfs 20, 33
  pifont 23, 33
  pxfonts . . 10, 11, 17–20, 30
  stmaryrd 15–17, 30, 33
  textcomp 4–7, 30, 33
  tipa 5, 6, 8, 9, 33
  txfonts 10, 11, 17–20, 30, 33
  ulsy 19, 33
  url 32
  wasysym . . 8, 10, 11, 17, 21, 23, 30, 33
  yfonts 20, 33
  zapfchan 33
\PaperLandscape 29
\PaperPortrait 29
\parallel 10
\ParallelPort 22
\partial 11
\Peace 27
\PencilLeft 26
\PencilLeftDown 26
\PencilLeftUp 26
\PencilRight 26
\PencilRightDown 26
\PencilRightUp 26
pencils 23, 26
\pentagon 23
\permil 23
\Perp 18
\perp 10
\Pfund 9
\Phi 13
\phi 13
\phiup 18
\Phone 27
\phone 23
\PhoneHandset 27
phonetic symbols 8
\photon 21
physical symbols 21
\Pi 13
\pi 13
\Pickup 22
pifont 23, 33
\Pisces 22
\pitchfork 15
\piup 18
\Plane 27
\Plus 26
\PlusCenterOpen 26
\PlusOutline 26
plusses 26
\PlusThinCenterOpen 26
\Pluto 22
\pluto 21
\pm 10
\pointer 23
\Pointinghand 24
polygons 23
\pounds 4
\Pr 12
\prec 10
\precapprox 15
\preccurlyeq 15
\preceq 10
\preceqq 18
\precnapprox 15
\precneqq 18
\precnsim 15
\precsim 15
\prime 11
prime numbers . *see* alphabets, math
\Printer 22
\prod 11
\projlim 14
\propto 10
\Psi 13
\psi 13
\psiup 18
pulse diagram symbols 22
\PulseHigh 22
\PulseLow 22
punctuation 5, 10
pxfonts 10, 11, 17–20, 30

Q

\quarternote 23
quaternions *see* alphabets, math
\quotedblbase 5
\quotesinglbase 5

R

\r 5
\Radiation 29
\Radioactivity 22
\Rain 27
\RainCloud 27
\RaisingEdge 22
\rangle 12
rational numbers *see* alphabets, math
\Rbag 15
\rbag 15
\rceil 12
\Re 11
real numbers *see* alphabets, math
\recorder 23
\Rectangle 27
\RectangleBold 27
rectangles 27
\RectangleThin 27
\Rectpipe 21
\Rectsteel 21
registered trademark . . . . . *see* \textregistered
relational symbols 10
  binary 15–17
  negated binary 15, 17
\restoresymbol 30
\restriction . . . . . *see* \upharpoonright
\revddots 31
\reversedvideodbend 25
\Rewind 24
\RewindToIndex 24
\RewindToStart 24
\rfloor 12
\rgroup 12
\RHD 17
\rhd 10, 17
\rho 13

\rhoup 18
\right 12
\RIGHTarrow 23
\Rightarrow 11, 25, 30
\rightarrow 11
\rightarrowtail 13
\rightarrowtriangle 16
\RIGHTCIRCLE 23
\RIGHTcircle 23
\Rightcircle 23
\RightDiamond 28
\rightharpoondown 11
\rightharpoonup 11
\rightleftarrows 13
\rightleftharpoons . 11, 13, 30
\rightmoon 21
\rightrightarrows 13
\Rightscissors 24
\rightslice 16
\rightsquigarrow 13
\rightthreetimes 14
\Righttorque 21
\rightturn 23
\risingdotseq 15
\rJoin 18
\rlap 28
\rmoustache 12
\RoundedLsteel 21
\RoundedTsteel 21
\RoundedTTsteel 21
\rrbracket 15
\rrceil 15
\rrfloor 15
\Rrightarrow 18
\rrparenthesis 16
\Rsh 13
\rtimes 14

S

\S 4
safety-related symbols 22
\Sagittarius 22
sans 20
\Saturn 22
\saturn 21
\savesymbol 30
scientific symbols 21
\ScissorHollowLeft 26
\ScissorHollowRight 26
\ScissorLeft 26
\ScissorLeftBrokenBottom . 26
\ScissorLeftBrokenTop . . . 26
\ScissorRight 26
\ScissorRightBrokenBottom 26
\ScissorRightBrokenTop . . . 26
scissors 23, 26
\Scorpio 22
script letters *see* alphabets, math
\Searrow 18
\searrow 11
\sec 12
\SectioningDiamond 29
\SerialInterface 22
\SerialPort 22
\setminus 10
\sharp 11, 23
\Shilling 9
\shortdownarrow 16
\ShortFifty 25
\ShortForty 25
\shortleftarrow 16
\shortmid 15
\ShortNinetyFive 25
\shortparallel 15
\ShortPulseHigh 22
\ShortPulseLow 22
\shortrightarrow 16
\ShortSixty 25
\ShortThirty 25
\shortuparrow 16
\showclock 28
\Sigma 13
\sigma 13
\sigmaup 18
\sim 10, 32
\simeq 10
\sin 12
\sinh 12
\SixFlowerAlternate 26
\SixFlowerAltPetal 26
\SixFlowerOpenCenter 26
\SixFlowerPetalDotted . . . 26
\SixFlowerPetalRemoved . . . 26
\SixFlowerRemovedOpenPetal 26
\SixStar 26
\SixteenStarLight 26
\SmallCircle 28
\SmallCross 28
\SmallDiamondshape 28
\smallfrown 15
\SmallHBar 28
\SmallLowerDiamond 28
\SmallRightDiamond 28
\smallsetminus 14
\smallsmile 15
\SmallSquare 28
\SmallTriangleDown 28
\SmallTriangleLeft 28
\SmallTriangleRight 28
\SmallTriangleUp 28
\SmallVBar 28
\smile 10
\Smiley 25
\smiley 23
\Snow 27
\SnowCloud 27
\Snowflake 26
\SnowflakeChevron 26
\SnowflakeChevronBold . . . 26
snowflakes 23, 26
spades (suit) 23
\spadesuit 11
\Sparkle 26
\SparkleBold 26
sparkles 23, 26
special characters 4
\SpecialForty 25
\sphericalangle 14
\SpinDown 28
\SpinUp 28
\sqcap 10
\sqcapplus 17
\sqcup 10
\sqcupplus 17
\sqiiint 19
\sqiint 19
\sqint 19
\sqrt 13
\sqsubset 10, 15, 17
\sqsubseteq 10
\sqsupset 10, 15, 17
\sqsupseteq 10
\Square 23, 27, 28, 30
\square 14
\SquareCastShadowBottomRight 27
\SquareCastShadowTopLeft . 27
\SquareCastShadowTopRight 27
\Squaredot 19
\Squarepipe 21
squares 23, 27, 28
\SquareShadowA 28
\SquareShadowB 28
\SquareShadowBottomRight . 27
\SquareShadowC 28
\SquareShadowTopLeft 27
\SquareShadowTopRight . . . 27
\SquareSolid 27
\Squaresteel 21
\SS 4
\ss 4
\ssearrow 16
\sslash 16
\sswarrow 16
\star 10
stars 23, 26
stmaryrd 15–17, 30, 33
\StoneMan 27
\Stopsign 22
\StopWatchEnd 28
\StopWatchStart 28
\strictfi 18
\strictif 18
\strictiff 18
\StrokeFive 29
\StrokeFour 29
\StrokeOne 29
\StrokeThree 29
\StrokeTwo 29
\Subset 15
\subset 10
\subseteq 10
\subseteqq 15
\subsetneq 15
\subsetneqq 15
\subsetplus 16
\subsetpluseq 16
\succ 10
\succapprox 15

\succcurlyeq 15
\succeq 10
\succeqq 18
\succnapprox 15
\succneqq 18
\succnsim 15
\succsim 15
\sum 11
\Summit 27
\SummitSign 27
\Sun 22, 27, 30
\sun 23
\SunCloud 27
\SunshineOpenCircled 27
\sup 12
\Supset 15
\supset 10
\supseteq 10
\supseteqq 15
\supsetneq 15
\supsetneqq 15
\supsetplus 16
\supsetpluseq 16
\surd 11
\Swarrow 18
\swarrow 11
symbols
  alpine 27
  APL 21
  astrological 22
  astronomical 21, 22
  biological 21
  body text 4
  clock 28
  communication 22
  computer hardware 22
  contradiction 19
  currency 9
  dangerous bend 25
  dictionary . . *see* symbols, phonetic
  electrical 21
  engineering 21, 22
  geneological 6
  general 23
  information 24
  Knuth's 25
  laundry 25
  linguistic 8
  log-like 12, 14
  math-mode 17
  mathematical 10
  METAFONTbook 25
  miscellaneous 11, 14, 19, 23, 25, 27, 29
  navigation 24
  phonetic 8
  physical 21
  pulse diagram 22
  relational 10
  safety-related 22
  scientific 21
  technological 21
  TEXbook 25
  variable-sized 11, 16, 17, 19
  weather 27
  zodiacal 22

T

\t 5
\talloblong 16
tally markers 29
\tan 12
\tanh 12
\Tape 27
tape drive 23
\Taschenuhr 28
\tau 13
\Taurus 22
\tauup 18
technological symbols 21
\Telefon 22
\Telephone 29
telephone 23
\Tent 27
TEXbook, The 31, 32
  symbols from 25
\textacutedbl 6
\textacutemacron 5
\textacutewedge 5
\textadvancing 5
\textasciiacute 6
\textasciibreve 6
\textasciicaron 6
\textasciicircum 4, 32
\textasciidieresis 6
\textasciigrave 6
\textasciimacron 6
\textasciitilde 4, 32
\textasteriskcentered . . 4, 6
\textbabygamma 8
\textbackslash 4, 33
\textbaht 6
\textbar 4, 32, 33
\textbarb 8
\textbarc 8
\textbard 8
\textbardbl 6
\textbardotlessj 8
\textbarg 8
\textbarglotstop 8
\textbari 8
\textbarl 8
\textbaro 8
\textbarrevglotstop 8
\textbaru 8
\textbeltl 8
\textbeta 8
\textbigcircle 7
\textblank 7
\textborn 7
\textbottomtiebar 5
\textbraceleft 4
\textbraceright 4
\textbrevemacron 5
\textbrokenbar 7
\textbullet 4, 7
\textbullseye 8
\textcelsius 7
\textceltpal 8
\textcent 7
\textcentoldstyle 7
\textchi 8
\textcircled 5
\textcircledP 7
\textcircumacute 5
\textcircumdot 5
\textcloseepsilon 8
\textcloseomega 8
\textcloserevepsilon 8
\textcolonmonetary 7
\textcommatailz 8
textcomp 4–7, 30, 33
\textcopyleft 7
\textcopyright 4, 7
\textcorner 8
\textcrb 8
\textcrd 8
\textcrg 8
\textcrh 8
\textcrinvglotstop 8
\textcrlambda 8
\textcrtwo 8
\textctc 8
\textctd 8
\textctdctzlig 8
\textctesh 8
\textctj 8
\textctn 8
\textctt 8
\textcttctclig 8
\textctyogh 8
\textctz 8
\textcurrency 7
\textdagger 4, 7
\textdaggerdbl 4, 7
\textdbend 25
\textdblhyphen 7
\textdblhyphenchar 7
\textdctzlig 8
\textdegree 7
\textdied 7
\textdiscount 7
\textdiv 7
\textdivorced 7
\textdollar 4, 7
\textdollaroldstyle 7
\textdong 7
\textdotacute 5
\textdotbreve 5
\textdoublebaresh 8
\textdoublebarpipe 8
\textdoublebarslash 8
\textdoublegrave 5
\textdoublepipe 8
\textdoublevbaraccent 5
\textdoublevertline 9
\textdownarrow 7
\textdownstep 9

\textdyoghlig 9
\textdzlig 9
\texteightoldstyle 7
\textellipsis 4
\textemdash 4
\textendash 4
\textepsilon 9
\textesh 9
\textestimated 7
\texteuro 7
\textexclamdown 4
\textfishhookr 9
\textfiveoldstyle 7
\textflorin 7
\textfouroldstyle 7
\textfractionsolidus 7
\textfrak 20
\textg 9
\textgamma 9
\textglobfall 9
\textglobrise 9
\textglotstop 8
\textgravecircum 5
\textgravedbl 7
\textgravedot 5
\textgravemid 5
\textgreater 4, 32, 33
\textguarani 7
\texthalflength 8
\texthardsign 8
\texthooktop 8
\texthtb 8
\texthtbardotlessj 8
\texthtc 8
\texthtd 8
\texthtg 8
\texthth 8
\texththeng 8
\texthtk 8
\texthtp 8
\texthtq 8
\texthtscg 8
\texthtt 8
\texthvlig 8
\textifsym 22
\textinterrobang 7
\textinterrobangdown 7
\textinvglotstop 8
\textinvscr 8
\textinvsubbridge 5
\textiota 8
\textlambda 8
\textlangle 7, 32
\textlbrackdbl 7
\textleaf 7
\textleftarrow 7
\textlengthmark 8
\textless 4, 32, 33
\textlhdbend 25
\textlhookt 8
\textlhti 8
\textlhtlongi 8
\textlira 7
\textlnot 7
\textlonglegr 8
\textlowering 5
\textlptr 8
\textlquill 7
\textltailm 8
\textltailn 8
\textltilde 8
\textlyoghlig 8
\textmarried 6
\textmho 6
\textmidacute 5
\textminus 6
\textmu 6
\textmusicalnote 6
\textnaira 6
\textnineoldstyle 6
\textnrleg 8
\textnumero 6
\textObardotlessj 8
\textohm 6
\textOlyoghlig 8
\textomega 8
\textonehalf 6
\textoneoldstyle 7
\textonequarter 7
\textonesuperior 7
\textopenbullet 7
\textopencorner 8
\textopeno 8
\textordfeminine 4, 7
\textordmasculine 4, 7
\textovercross 6
\textoverw 6
\textpalhook 8
\textparagraph 4, 7
\textperiodcentered 4, 7
\textpertenthousand 7
\textperthousand 7
\textpeso 7
\textphi 8
\textpilcrow 7
\textpipe 8
\textpm 7
\textpolhook 6
\textprimstress 8
\textquestiondown 4
\textquotedbl 5, 32
\textquotedblleft 4
\textquotedblright 4
\textquoteleft 4
\textquoteright 4
\textquotesingle 7
\textquotestraightbase 7
\textquotestraightdblbase . 7
\textraiseglotstop 8
\textraisevibyi 8
\textraising 6
\textramshorns 8
\textrangle 7, 32
\textrbrackdbl 7
\textrecipe 7, 30
\textrectangle 9
\textreferencemark 7
\textregistered 4, 7
\textretracting 6
\textrevapostrophe 9
\textreve 9
\textrevepsilon 9
\textreversedvideodbend .. 25
\textrevglotstop 9
\textrevyogh 9
\textrhookrevepsilon 9
\textrhookschwa 9
\textrhoticity 9
\textrightarrow 7
\textringmacron 6
\textroundcap 6
\textrptr 9
\textrquill 7
\textrtaild 9
\textrtaill 8
\textrtailn 8
\textrtailr 8
\textrtails 8
\textrtailt 8
\textrtailz 8
\textrthook 8
\textsca 8
\textscb 8
\textsce 8
\textscg 8
\textsch 8
\textschwa 8
\textsci 8
\textscj 8
\textscl 8
\textscn 8
\textscoelig 8
\textscomega 8
\textscq 8
\textscr 8
\textscripta 8
\textscriptv 8
\textscu 8
\textscy 8
\textseagull 6
\textsecstress 8
\textsection 4, 7
\textservicemark 7
\textsevenoldstyle 7
\textsixoldstyle 7
\textsoftsign 8
\textsterling 4, 7
\textstretchc 8
\textsubarch 6
\textsubbar 6
\textsubbridge 6
\textsubdot 6
\textsublhalfring 6
\textsubplus 6
\textsubrhalfring 6
\textsubring 6
\textsubsquare 6
\textsubtilde 6
\textsubumlaut 6

\textsubw 6
\textsubwedge 6
\textsuperimposetilde 6
\textsurd 7
\textswab 20
\textsyllabic 6
\texttctclig 8
\textteshlig 8
\texttheta 8
\textthorn 8
\textthreeoldstyle 7
\textthreequarters 7
\textthreequartersemdash . . 7
\textthreesuperior 7
\texttildedot 6
\texttildelow 7
\texttimes 7
\texttoptiebar 6
\texttrademark 4, 7
\texttslig 8
\textturna 8
\textturncelig 8
\textturnh 8
\textturnk 8
\textturnlonglegr 8
\textturnm 8
\textturnmrleg 8
\textturnr 8
\textturnrrtail 8
\textturnscripta 8
\textturnt 8
\textturnv 9
\textturnw 9
\textturny 9
\texttwelveudash 7
\texttwoldstyle 7
\texttwosuperior 7
\textunderscore 4
\textuparrow 7
\textupsilon 9
\textupstep 9
\textvbaraccent 6
\textvertline 9
\textvibyi 9
\textvibyy 9
\textvisiblespace 4
\textwon 7
\textwynn 9
\textyen 7
\textyogh 9
\textzerooldstyle 7
\TH 4
\th 4
\therefore 15
\Thermo 27
\Theta 13
\theta 13
\thetaup 18
\thickapprox 15
\thicksim 15
\ThinFog 27
\Thorn 8
\thorn 8
\tilde 12
time of day 28
Times 9
\times 10
tipa 5, 6, 8, 9, 33
\to . . . . . *see* \rightarrow
\ToBottom 24
\tone 9
\top 11
\ToTop 24
\triangle 11
\TriangleDown 27, 28, 30
\triangledown 14
\TriangleLeft 28
\triangleleft 10
\triangleleftteq 15
\triangleleftteqslant 16
\triangleq 15
\TriangleRight 28
\triangleright 10
\triangleright eq 15
\triangleright eqslant . . . 16
triangles 23, 27, 28
\TriangleUp 27, 28, 30
\Tsteel 21
\TTsteel 21
\Tumbler 25
\TwelweStar 26
\twoheadleftarrow 13
\twoheadrightarrow 13
\twonotes 23
txfonts . . . 10, 11, 17–20, 30, 33

U

\u 5
\ulcorner 13
ulsy 19, 33
\underbrace 13
\underline 13
unity . . . . *see* alphabets, math
\unlhd 10, 17
\unrhd 10, 17
\UParrow 23
\Uparrow 11, 12
\uparrow 11, 12
\Updownarrow 11, 12
\updownarrow 11, 12
\upharpoonleft 13
\upharpoonright 13
\uplus 10
\Upsilon 13
\upsilon 13
\upsilonup 18
\upuparrows 13
\Uranus 22
\uranus 21
\urcorner 13
url 32

V

\v 5
\varangle 23
\varbigcirc 16
\VarClock 28
\varclubsuit 19
\varcurlyvee 16
\varcurlywedge 16
\vardiamondsuit 19
\varepsilon 13
\varepsilonup 18
\VarFlag 27
varg 18
\varg 18
\varheartsuit 19
\varhexagon 23
\varhexstar 23
variable-sized symbols 11, 16, 17, 19
\VarIceMountain 27
\varinjlim 14
\varint 17
\varkappa 14
\varliminf 14
\varlimsup 14
\varmathbb 20
\VarMountain 27
\varnothing 14
\varoast 16
\varobar 16
\varobslash 16
\varocircle 16
\varodot 16
\varogreaterthan 16
\varoiiintclockwise 19
\varoiiintctrclockwise . . . 19
\varoiintclockwise 19
\varoiintctrclockwise . . . 19
\varoint 17
\varointclockwise 19
\varointctrclockwise 19
\varolessthan 16
\varominus 16
\varoplus 16
\varoslash 16
\varotimes 16
\varovee 16
\varowedge 16
\varparallel 18
\varparallelinv 18
\varphi 13
\varphiup 18
\varpi 13
\varpiup 18
\varprod 19
\varprojlim 14
\varpropto 15
\varrho 13
\varrhoup 18
\varsigma 13
\varsigmaup 18
\varspadesuit 19
\varsubsetneq 15
\varsubsetneqq 15
\VarSummit 27
\varsupsetneq 15
\varsupsetneqq 15

\VarTaschenuhr 28
\vartheta 13
\varthetaup 18
\vartimes 16
\vartriangle 14
\vartriangleleft 15
\vartriangleright 15
\varv 18
\varw 18
\vary 18
\VBar 28
\Vdash 15
\vDash 15
\vdash 10
\vdots 11
\vec 12
\Vectorarrow 19
\Vectorarrowhigh 19
\vee 10
\veebar 14
\Venus 22
\venus 21
\Vermessung 27
\vernal 21
\VHF 21
\Village 27
\Virgo 22
\VvDash 18
\Vvdash 15

W

\WashCotton 25
\WashSynthetics 25
\WashWool 25
\wasylozenge 23
\wasypropto 17
wasysym 8, 10, 11, 17, 21, 23, 30, 33
\wasytherefore 23
\WeakRain 27
\WeakRainCloud 27
weather symbols 27
\Wecker 28
\wedge 10
\Wheelchair 24
\widehat 13
\widetilde 13
\wind 27
\Womanface 25
\wp 11
\wr 10
\Writinghand 24

X

\XBox 23
\Xi 13
\xi 13
\xiup 18
Xs 23, 26
\XSolid 26
\XSolidBold 26
\XSolidBrush 26

Y

\Ydown 16
yfonts 20, 33
\Yinyang 25
\Yleft 16
\Yright 16
\Yup 16

Z

Zapf Chancery 20
Zapf Dingbats 23
zapfchan 33
\zeta 13
\zetaup 18
\Zodiac 22
zodiacal symbols 22