

The Comprehensive L^AT_EX Symbol List

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Abstract

This document lists 2266 symbols and the corresponding L^AT_EX commands that produce them. Some of these symbols are guaranteed to be available in every L^AT_EX 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 T_EX Archive Network (<http://www.ctan.org>).

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1 Introduction

Welcome to the Comprehensive L^AT_EX Symbol List! This document strives to be your primary source of L^AT_EX symbol information: font samples, L^AT_EX commands, packages, usage details, caveats—everything needed to put thousands of different symbols at your disposal. All of the fonts covered herein meet the following criteria:

1. They are freely available from the Comprehensive T_EX Archive Network (<http://www.ctan.org>).
2. All of their symbols have L^AT_EX 2_ε names. That is, a user should be able to access a symbol by name, not just by `\char<number>`.

These are not particularly limiting criteria; the Comprehensive L^AT_EX Symbol List contains samples of 2266 symbols—quite a large number. Some of these symbols are guaranteed to be available in every L^AT_EX 2_ε system; others require fonts and packages that may not accompany a given distribution and that therefore need to be installed. See <http://www.tex.ac.uk/cgi-bin/texfaq2html?label=instpackages+wherefiles> for help with installing new fonts and packages.

Document Usage

Each section of this document contains a number of font tables. Each table shows a set of symbols, with the corresponding L^AT_EX command to the right of each symbol. A table’s caption indicates what package needs to be loaded in order to access that table’s symbols. For example, the symbols in Table 16, “textcomp Old-Style Numerals”, are made available by putting “`\usepackage{textcomp}`” in your document’s preamble. “*AMS*” means to use one of the *AMS* symbol packages, such as `amssymb`. Notes below a table provide additional information about some or all the symbols in that table.

One note that appears a few times in this document, particularly in Section 2, indicates that certain symbols do not exist in the OT1 font encoding (Donald Knuth’s original, 7-bit font encoding, which is the default font encoding for L^AT_EX) and that you should use `fontenc` to select a different encoding, such as T1 (a common 8-bit font encoding). That means that you should put “`\usepackage[<encoding>]{fontenc}`” in your document’s preamble, where *<encoding>* is, e.g., T1 or LY1. To limit the change in font encoding to the current group, use “`\fontencoding{<encoding>}\selectfont`”.

Section 7 contains some additional information about the symbols in this document. It shows which symbol names are not unique across packages, gives examples of how to create new symbols out of existing symbols, explains how symbols are spaced in math mode, presents a L^AT_EX ASCII and Latin 1 tables, and provides some information about this document itself. The Comprehensive L^AT_EX Symbol List ends with an index of all the symbols in the document and various additional useful terms.

Frequently Requested Symbols

There are a number of symbols that are requested over and over again on `comp.text.tex`. If you’re looking for such a symbol, the following list will help you find it quickly.

© and ®	6	°, as in “180°” or “15°C”	24
_, as in “Spaces_are_significant.”	6	\mathcal{L} , \mathcal{F} , etc.	25
í, ì, î, î̄, etc. (versus í, ì, î̄, and î̂)	8	\mathbb{N} , \mathbb{Z} , \mathbb{R} , etc.	25
¢	10	· ·	39
€	10	á, è, etc. (i.e., several accents per character)	40
‰	13	<i>f</i>	40
ff	16	< and > (instead of <i>j</i> and <i>l</i>)	41
∴	17	~ (or ~)	42
:= and ::=	18		

2 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: L^AT_EX 2_ε Escapable “Special” Characters

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

TABLE 2: L^AT_EX 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 L^AT_EX 2_ε provides by default, and the right one is the “true” symbol that textcomp makes available.

TABLE 3: Predefined L^AT_EX 2_ε Text-Mode Commands

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

Where two symbols are present, the left one is the “faked” symbol that L^AT_EX 2_ε provides by default, and the right one is the “true” symbol that textcomp makes available.

TABLE 4: Non-ASCII Letters (Excluding Accented Letters)

Ǻ	\aa	Ð	\DH*	Ł	\L	ø	\o	ß	\ss
Å	\AA	ð	\dh*	ł	\l	Ø	\O	Š	\SS
Æ	\AE	Đ	\DJ*	Ǫ	\NG*	Œ	\OE	Þ	\TH*
æ	\ae	đ	\dj*	ǫ	\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 5: Letters Used to Typeset African Languages

Ð	\B{D}	ɛ	\m{c}	f	\m{f}	k	\m{k}	t	\M{t}	Ƶ	\m{Z}
đ	\B{d}	Ɖ	\m{D}	F	\m{F}	Ɗ	\m{N}	T	\M{T}	Ɛ	\T{E}
H	\B{H}	ɔ	\M{d}	Ƴ	\m{G}	ŋ	\m{n}	t	\m{t}	ɛ̃	\T{e}
h	\B{h}	Ɖ	\M{D}	Ƴ	\m{g}	o	\m{o}	T	\m{T}	Ɔ	\T{O}
t	\B{t}	d	\m{d}	l	\m{l}	Ɔ	\m{O}	u	\m{u}*	ɔ̃	\T{o}
T	\B{T}	Ɛ	\m{E}	i	\m{i}	P	\m{P}	U	\m{U}*		
b	\m{b}	ɛ	\m{e}	N	\m{J}	p	\m{p}	Y	\m{Y}		
B	\m{B}	Ɛ	\M{E}	n	\m{j}	s	\m{s}	y	\m{y}		
C	\m{C}	ə	\M{e}	K	\m{K}	S	\m{S}	z	\m{z}		

These characters all need the T4 font encoding, which is provided by the `fc` package.

* `\m{v}` and `\m{V}` are synonyms for `\m{u}` and `\m{U}`.

TABLE 6: 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 7: `pifont` Decorative Punctuation Marks

•	\ding{123}	“	\ding{125}	¶	\ding{161}	•	\ding{163}
•	\ding{124}	”	\ding{126}	¶	\ding{162}		

TABLE 8: Text-Mode Accents

Ää	\{"A}\{a}	Àà	\' {A}\' {a}	Ảả	\H{A}\H{a}	Ǻǻ	\u{A}\u{a}
Áá	\' {A}\' {a}	Ảa	\b{A}\b{a}	Ảạ	\k{A}\k{a}†	Ǻǻ	\v{A}\v{a}
Ââ	\. {A}\. {a}	Ảạ	\c{A}\c{a}	Ảã	\r{A}\r{a}	Ãã	\~{A}\~{a}
Ãã	\={A}\={a}	Ảạ	\d{A}\d{a}	Ảâ	\t{A}\t{a}		
Ââ	\^{A}\^{a}	Ảã	\G{A}\G{a}‡	Ảã	\U{A}\U{a}‡		
Ââ	\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.

‡ Requires the T4 font encoding, provided by the `fc` package.

Also note the existence of `\i` and `\j`, which produce dotless versions of “i” and “j” (viz., “i” and “j”). 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 9: tipa Text-Mode Accents

Áá	\textacutemacron{A}\textacutemacron{a}
Ảa	\textacutewedge{A}\textacutewedge{a}
Ảạ	\textadvancing{A}\textadvancing{a}
Ảa	\textbottomtiebar{A}\textbottomtiebar{a}
Ảã	\textbreve{A}\textbreve{a}
Ảã	\textcirc{A}\textcirc{a}
Ảâ	\textcirc{A}\textcirc{a}
Ảã	\textdot{A}\textdot{a}
Ảã	\textdot{A}\textdot{a}
Ảã	\textdot{A}\textdot{a}
Ảã	\textdoublegrave{A}\textdoublegrave{a}
Ảã	\textdoublevbaraccent{A}\textdoublevbaraccent{a}
Ảã	\textgravecircum{A}\textgravecircum{a}
Ảã	\textgravedot{A}\textgravedot{a}
Ảã	\textgravemid{A}\textgravemid{a}
Ảạ	\textinvsubbridge{A}\textinvsubbridge{a}
Ảạ	\textlowering{A}\textlowering{a}
Ảã	\textmidacute{A}\textmidacute{a}
Ảã	\textovercross{A}\textovercross{a}
Ảã	\textoverw{A}\textoverw{a}

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$\underset{\cdot}{A}a$	<code>\textpolhook{A}\textpolhook{a}</code>
$\underset{\cdot}{A}a$	<code>\textraising{A}\textraising{a}</code>
$\underset{\cdot}{A}a$	<code>\textretracting{A}\textretracting{a}</code>
$\overset{\circ}{A}a$	<code>\textringmacron{A}\textringmacron{a}</code>
$\hat{A}a$	<code>\textroundcap{A}\textroundcap{a}</code>
$\underset{\cdot}{A}a$	<code>\textseagull{A}\textseagull{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubarch{A}\textsubarch{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubbar{A}\textsubbar{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubbridge{A}\textsubbridge{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubdot{A}\textsubdot{a}</code>
$\underset{\cdot}{A}a$	<code>\textsublhalfring{A}\textsublhalfring{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubplus{A}\textsubplus{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubrhalfring{A}\textsubrhalfring{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubring{A}\textsubring{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubsquare{A}\textsubsquare{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubtilde{A}\textsubtilde{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubumlaut{A}\textsubumlaut{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubw{A}\textsubw{a}</code>
$\underset{\cdot}{A}a$	<code>\textsubwedge{A}\textsubwedge{a}</code>
Aa	<code>\textsuperimposetilde{A}\textsuperimposetilde{a}</code>
$\underset{\cdot}{A}a$	<code>\textsyllabic{A}\textsyllabic{a}</code>
$\overset{\cdot}{A}a$	<code>\texttildedot{A}\texttildedot{a}</code>
$\widehat{A}a$	<code>\texttoptiebar{A}\texttoptiebar{a}</code>
$\overset{\cdot}{A}a$	<code>\textvbaraccent{A}\textvbaraccent{a}</code>

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

TABLE 10: `wsuipa` Text-Mode Accents

$\underset{\cdot}{A}a$	<code>\dental{A}\dental{a}</code>
$\underset{\cdot}{A}a$	<code>\underarch{A}\underarch{a}</code>

TABLE 11: wsuipa Diacritics

ˆ	\ain	<	\leftp	˚	\overring	˘	\stress	˘	\underwedge
⌈	\corner	⌈	\leftt	ˆ	\polishhook	˘	\syllabic	ˆ	\upp
˘	\downp	:	\length	>	\rightp	˘	\underdots	⌋	\upt
⌊	\downt	˜	\midtilde	⌊	\rightt	˘	\underring		
˘	\halflength	˘	\open	˘	\secstress	˘	\undertilde		

The `wsuipa` package defines all of the above as ordinary characters, not as accents. However, it does provide `\diatop` and `\diaunder` commands, which are used to compose diacritics with other characters. For example, `\diatop[\overring|a]` produces “å”, and `\diaunder[\underdots|a]` produces “ä”. See the `wsuipa` documentation for more information.

TABLE 12: textcomp Diacritics

˘	\textacutedbl	˘	\textasciicaron	˘	\textasciimacron
˘	\textasciiacute	˘	\textasciidieresis	˘	\textgravedbl
˘	\textasciibreve	˘	\textasciigrave	˘	\texttildelow

The `textcomp` package defines all of the above as ordinary characters, not as accents.

TABLE 13: textcomp Currency Symbols

฿	\textbaht	\$	\textdollar	₵	\textguarani	₩	\textwon
¢	\textcent	\$	\textdollaroldstyle	£	\textlira	¥	\textyen
¢	\textcentoldstyle	₫	\textdong	₦	\textnaira		
₯	\textcolonmonetary	€	\texteuro	₱	\textpeso		
₣	\textcurrency	f	\textflorin	£	\textsterling		

TABLE 14: marvosym Currency Symbols

₴	\Denarius	€	\EUR	€	\EURdig	€	\EURtm	₣	\Pfund
@	\Ecommerce	€	\EURcr	€	\EURhv	\$	\EyesDollar	β	\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 63 (`\EURdig`).

TABLE 15: textcomp Legal Symbols

⒫	<code>\textcircledP</code>	©	©	<code>\textcopyright</code>	SM	<code>\textservicemark</code>
Ⓒ	<code>\textcopyleft</code>	®	®	<code>\textregistered</code>	TM	<code>\texttrademark</code>

Where two symbols are present, the left one is the “faked” symbol that L^AT_EX 2_ε provides by default, and the right one is the “true” symbol that textcomp makes available.

TABLE 16: textcomp Old-Style Numerals

0	<code>\textzerooldstyle</code>	4	<code>\textfouroldstyle</code>	8	<code>\texteightoldstyle</code>
1	<code>\texttoneoldstyle</code>	5	<code>\textfiveoldstyle</code>	9	<code>\textnineoldstyle</code>
2	<code>\texttwooldstyle</code>	6	<code>\textsixoldstyle</code>		
3	<code>\textthreeoldstyle</code>	7	<code>\textsevenoldstyle</code>		

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

TABLE 17: wasysym Phonetic Symbols

Ð	<code>\DH</code>	ð	<code>\dh</code>	ɔ	<code>\openo</code>
Þ	<code>\Thorn</code>	ə	<code>\inve</code>	þ	<code>\thorn</code>

TABLE 18: tipa Phonetic Symbols

ɣ	<code>\textbabygamma</code>	ʔ	<code>\textglotstop</code>	l	<code>\textrtaill</code>
ḃ	<code>\textbarb</code>	˙	<code>\texthalflength</code>	ɳ	<code>\textrtailn</code>
Ḅ	<code>\textbarc</code>	ɸ	<code>\texthardsign</code>	ɽ	<code>\textrtailr</code>
ḅ	<code>\textbard</code>	˘	<code>\texthooktop</code>	ɿ	<code>\textrtails</code>
Ḇ	<code>\textbardotlessj</code>	Ḅ	<code>\texthtb</code>	ɿ	<code>\textrtailt</code>
ḇ	<code>\textbarg</code>	ḅ	<code>\texthtbardotlessj</code>	ɿ	<code>\textrtailz</code>
Ḉ	<code>\textbarglotstop</code>	Ḉ	<code>\texthtc</code>	˘	<code>\textrthook</code>
ḉ	<code>\textbari</code>	ḉ	<code>\texthtd</code>	A	<code>\textsca</code>
Ḋ	<code>\textbarl</code>	Ḋ	<code>\texthtg</code>	B	<code>\textscb</code>
ḋ	<code>\textbaro</code>	ḋ	<code>\texthth</code>	E	<code>\textsce</code>
Ḍ	<code>\textbarrevglotstop</code>	Ḍ	<code>\texththeng</code>	G	<code>\textscg</code>
ḅ	<code>\textbaru</code>	ḅ	<code>\texthtk</code>	H	<code>\textsch</code>
Ḇ	<code>\textbeltl</code>	Ḇ	<code>\texthtp</code>	ə	<code>\textschwa</code>
ḇ	<code>\textbeta</code>	ḇ	<code>\texthtq</code>	I	<code>\textsci</code>
⊙	<code>\textbullseye</code>	Ḉ	<code>\texthtscg</code>	J	<code>\textscj</code>
˘	<code>\textceltpal</code>	ḉ	<code>\texthtt</code>	L	<code>\textscL</code>
χ	<code>\textchi</code>	Ḋ	<code>\texthvlig</code>	N	<code>\textscN</code>
ε	<code>\textcloseepsilon</code>	ɰ	<code>\textinvglotstop</code>	œ	<code>\textscœlig</code>

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ω	<code>\textcloseomega</code>	Ϝ	<code>\textinvscr</code>	Ω	<code>\textscomega</code>
ε	<code>\textcloserevepsilon</code>	ι	<code>\textiota</code>	Q	<code>\textscq</code>
z	<code>\textcommatailz</code>	λ	<code>\textlambda</code>	R	<code>\textscr</code>
⌈	<code>\textcorner</code>	:	<code>\textlengthmark</code>	α	<code>\textscripta</code>
b	<code>\textcrb</code>	‡	<code>\textlhookt</code>	υ	<code>\textscriptv</code>
đ	<code>\textcrd</code>	ı	<code>\textlhiti</code>	ϋ	<code>\textscu</code>
g	<code>\textcrg</code>	ı̇	<code>\textlhtlongi</code>	Υ	<code>\textscy</code>
h	<code>\textcrh</code>	ı̈	<code>\textlonglegr</code>	ˆ	<code>\textsecstress</code>
š	<code>\textcrinvglotstop</code>	ˆ	<code>\textlptr</code>	ˆ	<code>\textsoftsign</code>
λ	<code>\textcrlambda</code>	ı̊	<code>\textltailm</code>	⌈	<code>\textstretchc</code>
z	<code>\textcrtwo</code>	ı̋	<code>\textltailn</code>	⌋	<code>\texttctclig</code>
ε	<code>\textctc</code>	ı̌	<code>\textltilde</code>	ı̍	<code>\textttheshlig</code>
đ	<code>\textctd</code>	ı̎	<code>\textlyoghlig</code>	θ	<code>\texttheta</code>
dz	<code>\textctdctzlig</code>	ı̏	<code>\textnrleg</code>	þ	<code>\textthorn</code>
ı̐	<code>\textctesh</code>	ı̑	<code>\textObardotlessj</code>	ı̒	<code>\texttlig</code>
j	<code>\textctj</code>	ı̓	<code>\textOlyoghlig</code>	ı̔	<code>\textturna</code>
ı̕	<code>\textctn</code>	ω	<code>\textomega</code>	ı̕	<code>\textturncelig</code>
ı̖	<code>\textctt</code>	⌈	<code>\textopencorner</code>	ı̖	<code>\textturnh</code>
ı̗	<code>\textcttctclig</code>	ı̏	<code>\textopeno</code>	ı̗	<code>\textturnk</code>
ı̘	<code>\textctyogh</code>	ı̐	<code>\textpalhook</code>	ı̘	<code>\textturnlonglegr</code>
z	<code>\textctz</code>	φ	<code>\textphi</code>	ı̙	<code>\textturnm</code>
dz	<code>\textdctzlig</code>		<code>\textpipe</code>	ı̚	<code>\textturnmrleg</code>
f	<code>\textdoublebaresh</code>	ˆ	<code>\textprimstress</code>	ı̛	<code>\textturnr</code>
ı̜	<code>\textdoublebarpipe</code>	ˆ	<code>\textraiseglotstop</code>	ı̜	<code>\textturnrrtail</code>
ı̝	<code>\textdoublebarslash</code>	ı̏	<code>\textraiseviby</code>	ı̝	<code>\textturnscripta</code>
	<code>\textdoublepipe</code>	ı̑	<code>\texttramshorns</code>	ı̞	<code>\textturnt</code>
	<code>\textdoublevertline</code>	ı̑	<code>\textrectangle</code>	ı̟	<code>\textturnv</code>
↓	<code>\textdownstep</code>	ı̑	<code>\textrevapostrophe</code>	ı̠	<code>\textturnw</code>
đ̇	<code>\textdyoghlig</code>	ı̑	<code>\textreve</code>	ı̡	<code>\textturny</code>
dz	<code>\textdzlig</code>	ı̑	<code>\textrevepsilon</code>	ı̢	<code>\textupsilon</code>
ε	<code>\textepsilon</code>	ı̑	<code>\textrevglotstop</code>	ı̣	<code>\textupstep</code>
ı̥	<code>\textesh</code>	ı̑	<code>\textrevyogh</code>		<code>\textvertline</code>
r	<code>\textfishhookr</code>	ı̑	<code>\textrhookrevepsilon</code>	ı̤	<code>\textviby</code>
g	<code>\textg</code>	ı̑	<code>\textrhookschwa</code>	ı̥	<code>\textvibyy</code>
γ	<code>\textgamma</code>	ı̑	<code>\textrhoticity</code>	p	<code>\textwynn</code>
↘	<code>\textglobfall</code>	>	<code>\textrptr</code>	ı̧	<code>\textyogh</code>
↗	<code>\textglobrise</code>	ı̑	<code>\textrtaild</code>		

`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 19: `wsuipa` Phonetic Symbols

ı̦ `\babygamma` ı̧ `\eng` ı̨ `\labdentalnas` ə `\schwa`

(continued on next page)

(continued from previous page)

\bar{b}	<code>\barb</code>	\varkappa	<code>\er</code>	\dagger	<code>\latfric</code>	I	<code>\sci</code>
\bar{d}	<code>\bard</code>	\int	<code>\esh</code>	\updownarrow	<code>\legm</code>	N	<code>\scn</code>
\bar{i}	<code>\bari</code>	δ	<code>\eth</code>	Γ	<code>\legr</code>	R	<code>\scr</code>
\bar{l}	<code>\barl</code>	r	<code>\flapr</code>	\mathfrak{h}	<code>\lz</code>	a	<code>\scripta</code>
\bar{o}	<code>\baro</code>	?	<code>\glotstop</code>	α	<code>\nialpha</code>	g	<code>\scriptg</code>
\bar{p}	<code>\barp</code>	\mathfrak{b}	<code>\hookb</code>	β	<code>\nibeta</code>	v	<code>\scriptv</code>
\bar{s}	<code>\barsci</code>	\mathfrak{d}	<code>\hookd</code>	χ	<code>\nichi</code>	U	<code>\scu</code>
\bar{u}	<code>\barscu</code>	\mathfrak{g}	<code>\hookg</code>	ε	<code>\niepsilon</code>	Y	<code>\scy</code>
\bar{u}	<code>\baru</code>	\mathfrak{h}	<code>\hookh</code>	γ	<code>\nigamma</code>	\textbackslash	<code>\slashb</code>
$\text{\textcircled{.}}$	<code>\clickb</code>	\mathfrak{h}	<code>\hookheng</code>	$\text{\textcircled{.}}$	<code>\niiota</code>	\textbackslash	<code>\slashc</code>
$\text{\textcircled{C}}$	<code>\clickc</code>	$\text{\textcircled{3}}$	<code>\hookrepsv</code>	λ	<code>\nilambda</code>	\textbackslash	<code>\slashd</code>
$\text{\textcircled{t}}$	<code>\clickt</code>	$\text{\textcircled{h}}$	<code>\hv</code>	ω	<code>\niomega</code>	\textbackslash	<code>\slashu</code>
ω	<code>\closedniomega</code>	e	<code>\inva</code>	ϕ	<code>\nipher</code>	\textbackslash	<code>\taild</code>
$\text{\textcircled{3}}$	<code>\closedrepsv</code>	J	<code>\invf</code>	σ	<code>\nisigma</code>	\textbackslash	<code>\tailinvr</code>
\bar{b}	<code>\crossb</code>	$\text{\textcircled{b}}$	<code>\invglotstop</code>	θ	<code>\nitheta</code>	\textbackslash	<code>\taill</code>
\bar{d}	<code>\crossd</code>	$\text{\textcircled{u}}$	<code>\invh</code>	$\text{\textcircled{v}}$	<code>\niupsilon</code>	η	<code>\tailn</code>
\bar{h}	<code>\crossh</code>	$\text{\textcircled{l}}$	<code>\invlegr</code>	$\text{\textcircled{j}}$	<code>\nj</code>	\textbackslash	<code>\tailr</code>
λ	<code>\crossnilambda</code>	$\text{\textcircled{u}}$	<code>\invm</code>	∞	<code>\oo</code>	\textbackslash	<code>\tails</code>
\mathfrak{c}	<code>\curlyc</code>	$\text{\textcircled{i}}$	<code>\invr</code>	$\text{\textcircled{o}}$	<code>\openo</code>	\textbackslash	<code>\tailt</code>
\mathfrak{f}	<code>\curlyesh</code>	$\text{\textcircled{B}}$	<code>\invscr</code>	$\text{\textcircled{e}}$	<code>\reve</code>	\textbackslash	<code>\tailz</code>
\mathfrak{z}	<code>\curlyyogh</code>	$\text{\textcircled{v}}$	<code>\invscripta</code>	$\text{\textcircled{r}}$	<code>\rereject</code>	\textbackslash	<code>\tesh</code>
$\text{\textcircled{z}}$	<code>\curlyz</code>	Λ	<code>\invv</code>	$\text{\textcircled{3}}$	<code>\repsv</code>	\textbackslash	<code>\thorn</code>
$\text{\textcircled{t}}$	<code>\dlbari</code>	$\text{\textcircled{M}}$	<code>\invw</code>	$\text{\textcircled{f}}$	<code>\revglotstop</code>	\textbackslash	<code>\tildel</code>
$\text{\textcircled{dz}}$	<code>\dz</code>	$\text{\textcircled{f}}$	<code>\invy</code>	D	<code>\scd</code>	\textbackslash	<code>\yogh</code>
$\text{\textcircled{r}}$	<code>\ejective</code>	$\text{\textcircled{y}}$	<code>\ipagamma</code>	G	<code>\scg</code>		

TABLE 20: Miscellaneous textcomp Symbols

$*$	<code>\textasteriskcentered</code>	\circ	<code>\textopenbullet</code>
\parallel	<code>\textbardbl</code>	$\text{\textcircled{a}}$	<code>\textordfeminine</code>
$\text{\textcircled{O}}$	<code>\textbigcircle</code>	$\text{\textcircled{o}}$	<code>\textordmasculine</code>
$\bar{}$	<code>\textblank</code>	$\text{\textcircled{¶}}$	<code>\textparagraph</code>
$\text{\textcircled{ }}$	<code>\textbrokenbar</code>	\cdot	<code>\textperiodcentered</code>
\bullet	<code>\textbullet</code>	$\text{\textcircled{‰}}$	<code>\textpertenthousand</code>
\dagger	<code>\textdagger</code>	$\text{\textcircled{‰}}$	<code>\textperthousand</code>
\ddagger	<code>\textdaggerdbl</code>	$\text{\textcircled{¶}}$	<code>\textpilcrow</code>
$=$	<code>\textdblhyphen</code>	$'$	<code>\textquotesingle</code>
$\text{\textcircled{=}}$	<code>\textdblhyphenchar</code>	$\text{\textcircled{ }}$	<code>\textquotestraightbase</code>
$\%$	<code>\textdiscount</code>	$\text{\textcircled{ }}$	<code>\textquotestraightdblbase</code>
e	<code>\textestimated</code>	$\text{\textcircled{R}}$	<code>\textrecipe</code>
$\text{\textcircled{?}}$	<code>\textinterrobang</code>	$\text{\textcircled{*}}$	<code>\textreferencemark</code>
$\text{\textcircled{\textdownarrow}}$	<code>\textinterrobangdown</code>	$\text{\textcircled{§}}$	<code>\textsection</code>
$\text{\textcircled{\textmusicalnote}}$	<code>\textmusicalnote</code>	$\text{\textcircled{—}}$	<code>\textthreequartersemdash</code>
$\text{\textcircled{N}^e}$	<code>\textnumero</code>	$\text{\textcircled{—}}$	<code>\texttwelveudash</code>

Where two symbols are present, the left one is the “faked” symbol that L^AT_EX 2_ε provides by default, and the right one is the “true” symbol that textcomp makes available.

3 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., “ \mathcal{L} ” and “ \mathbb{Z} ”) are usually produced using one of the math alphabets in Table 66 rather than with an explicit symbol command. Look there first if you need a symbol for a transform, number set, or some other alphanumeric.

The various text-mode symbols defined by the `textcomp` package are made available in math mode through the `mathcomp` package.

TABLE 21: Binary Operators

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

* Not predefined in $\text{\LaTeX} 2_{\epsilon}$. Use one of the packages `latexsym`, `amsfonts`, `amssymb`, `txfonts`, `pxfonts`, or `wasy`.

TABLE 22: Variable-sized Math Operators

\bigcap	<code>\bigcap</code>	\bigotimes	<code>\bigotimes</code>	\bigwedge	<code>\bigwedge</code>	\prod	<code>\prod</code>
\bigcup	<code>\bigcup</code>	\bigsqcup	<code>\bigsqcup</code>	\coprod	<code>\coprod</code>	\sum	<code>\sum</code>
\bigodot	<code>\bigodot</code>	\biguplus	<code>\biguplus</code>	\int	<code>\int</code>		
\bigoplus	<code>\bigoplus</code>	\bigvee	<code>\bigvee</code>	\oint	<code>\oint</code>		

TABLE 23: \mathcal{AMS} Binary Operators

$\bar{\wedge}$	<code>\barwedge</code>	\circledcirc	<code>\circledcirc</code>	\intercal	<code>\intercal</code>
\boxdot	<code>\boxdot</code>	\circleddash	<code>\circleddash</code>	\leftthreetimes	<code>\leftthreetimes</code>
\boxminus	<code>\boxminus</code>	\Cup	<code>\Cup</code>	\ltimes	<code>\ltimes</code>
\boxplus	<code>\boxplus</code>	\curlyvee	<code>\curlyvee</code>	\rightthreetimes	<code>\rightthreetimes</code>
\boxtimes	<code>\boxtimes</code>	\curlywedge	<code>\curlywedge</code>	\rtimes	<code>\rtimes</code>
\Cap	<code>\Cap</code>	\divideontimes	<code>\divideontimes</code>	\smallsetminus	<code>\smallsetminus</code>
\centerdot	<code>\centerdot</code>	\dotplus	<code>\dotplus</code>	\veebar	<code>\veebar</code>
\circledast	<code>\circledast</code>	$\bar{\wedge}$	<code>\doublebarwedge</code>		

TABLE 24: stmaryrd Binary Operators

ϕ	<code>\baro</code>	$\parallel\parallel$	<code>\interleave</code>	\otimes	<code>\varoast</code>
$\backslash\backslash$	<code>\bbslash</code>	\triangleleft	<code>\leftslice</code>	$\textcircled{\circ}$	<code>\varobar</code>
$\&$	<code>\binampersand</code>	\M	<code>\merge</code>	$\textcircled{/}$	<code>\varobslash</code>
\wp	<code>\bindnasrepma</code>	\ominus	<code>\minuso</code>	$\textcircled{\circ}$	<code>\varocircle</code>
\boxast	<code>\boxast</code>	\pm	<code>\moo</code>	$\textcircled{\cdot}$	<code>\varodot</code>
\boxbar	<code>\boxbar</code>	\oplus	<code>\nplus</code>	$\textcircled{>}$	<code>\varogreaterthan</code>
\boxbox	<code>\boxbox</code>	$\textcircled{\circ}$	<code>\obar</code>	$\textcircled{<}$	<code>\varolessthan</code>
\boxbslash	<code>\boxbslash</code>	\square	<code>\oblong</code>	\ominus	<code>\varominus</code>
\boxcircle	<code>\boxcircle</code>	$\textcircled{/}$	<code>\obslash</code>	\oplus	<code>\varoplus</code>
\boxdot	<code>\boxdot</code>	$\textcircled{>}$	<code>\ogreaterthan</code>	$\textcircled{/}$	<code>\varoslash</code>
\boxempty	<code>\boxempty</code>	$\textcircled{<}$	<code>\olessthan</code>	\otimes	<code>\varotimes</code>
\boxslash	<code>\boxslash</code>	$\textcircled{\vee}$	<code>\ovee</code>	$\textcircled{\vee}$	<code>\varovee</code>
\curlyveedownarrow	<code>\curlyveedownarrow</code>	$\textcircled{\wedge}$	<code>\owedge</code>	$\textcircled{\wedge}$	<code>\varowedge</code>
\curlyveeuparrow	<code>\curlyveeuparrow</code>	\triangleright	<code>\rightslice</code>	\times	<code>\vartimes</code>
\curlywedgedownarrow	<code>\curlywedgedownarrow</code>	$//$	<code>\sslash</code>	\Uparrow	<code>\Ydown</code>
\curlywedgeuparrow	<code>\curlywedgeuparrow</code>	\parallel	<code>\talloblong</code>	\leftarrow	<code>\Yleft</code>
\fatbslash	<code>\fatbslash</code>	\bigcirc	<code>\varbigcirc</code>	\rightarrow	<code>\Yright</code>
\fatsemi	<code>\fatsemi</code>	\curlyvee	<code>\varcurlyvee</code>	\Uparrow	<code>\Yup</code>
\fatslash	<code>\fatslash</code>	\curlywedge	<code>\varcurlywedge</code>		

TABLE 25: Variable-sized stmaryrd Math Operators

$\square\square$	<code>\bigbox</code>	$\parallel\parallel\parallel$	<code>\biginterleave</code>	$\square\square$	<code>\bigsqcap</code>
$\curlyvee\curlyvee$	<code>\bigcurlyvee</code>	$\oplus\oplus$	<code>\bignplus</code>	$\nabla\nabla$	<code>\bigtriangledown</code>
$\curlywedge\curlywedge$	<code>\bigcurlywedge</code>	$\parallel\parallel$	<code>\bigparallel</code>	$\triangle\triangle$	<code>\bigtriangleup</code>

TABLE 26: Variable-sized wasysym Math Operators

$\int\int\int$	<code>\iiint</code>	$\oint\oint$	<code>\oiint</code>	\oint	<code>\varoint</code>
$\int\int$	<code>\iint</code>	$\int\int$	<code>\varint</code>		

TABLE 27: txfonts/pxfonts Binary Operators

$\textcircled{\bar{}}$	<code>\circledbar</code>	$\textcircled{\wedge}$	<code>\circledwedge</code>	\bigcirc	<code>\medcirc</code>
$\textcircled{/}$	<code>\circledbslash</code>	\wp	<code>\invamp</code>	\boxplus	<code>\sqcapplus</code>
$\textcircled{\vee}$	<code>\circledvee</code>	\bullet	<code>\medbullet</code>	\boxcup	<code>\sqcupplus</code>

TABLE 28: Variable-sized txfonts/pxfonts Math Operators

\boxplus	$\boxed{+}$	<code>\bigsqcapplus</code>	\oint	\oint	<code>\ointclockwise</code>
\boxcup	$\boxed{+}$	<code>\bigsqcupplus</code>	\oint	\oint	<code>\ointctrcklockwise</code>
f	f	<code>\fint</code>	\int	\int	<code>\sqiiint</code>
$f \dots f$	$\int \dots \int$	<code>\idotsint*</code>	\int	\int	<code>\sqiint</code>
\iiint	\iiint	<code>\iiiint*</code>	\int	\int	<code>\sqint</code>
\iiint	\iiint	<code>\iiiint*,†</code>	\int	\int	<code>\varoiintclockwise</code>
\iint	\iint	<code>\iint*,†</code>	\int	\int	<code>\varoiintctrcklockwise</code>
\oiint	\oiint	<code>\oiintclockwise</code>	\oint	\oint	<code>\varoiintclockwise</code>
\oiint	\oiint	<code>\oiintctrcklockwise</code>	\oint	\oint	<code>\varoiintctrcklockwise</code>
\oiint	\oiint	<code>\oiint</code>	\oint	\oint	<code>\varointclockwise</code>
\oiint	\oiint	<code>\oiintclockwise</code>	\oint	\oint	<code>\varointctrcklockwise</code>
\oiint	\oiint	<code>\oiintctrcklockwise</code>	\times	\times	<code>\varprod</code>
\oiint	\oiint	<code>\oiint†</code>			

* Also defined by amsmath.

† Also defined by wasysym.

TABLE 29: Relation Symbols

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

* Not predefined in $\text{\LaTeX} 2_{\epsilon}$. Use one of the packages `latexsym`, `amsfonts`, `amssymb`, `txfonts`, `pxfonts`, or `wasysym`.

TABLE 30: \mathcal{AMS} Binary Relations

\approx	<code>\approxeq</code>	\triangleright	<code>\gtrdot</code>	\smile	<code>\smallsmile</code>
\ni	<code>\backepsilon</code>	\gtrless	<code>\gtreqless</code>	\sqsubset	<code>\sqsubset</code>
\sim	<code>\backsim</code>	\gtrqless	<code>\gtreqqless</code>	\sqsupset	<code>\sqsupset</code>
\backsimeq	<code>\backsimeq</code>	\gtrless	<code>\gtrless</code>	\Subset	<code>\Subset</code>
\because	<code>\because</code>	\gtrsim	<code>\gtrsim</code>	\subsetneq	<code>\subsetneq</code>
\between	<code>\between</code>	\leqq	<code>\leqq</code>	\succapprox	<code>\succapprox</code>
\blacktriangleleft	<code>\blacktriangleleft</code>	\leqslant	<code>\leqslant</code>	\succcurlyeq	<code>\succcurlyeq</code>
\blacktriangleright	<code>\blacktriangleright</code>	\lessapprox	<code>\lessapprox</code>	\succsim	<code>\succsim</code>
\bumpeq	<code>\bumpeq</code>	\lessdot	<code>\lessdot</code>	\Supset	<code>\Supset</code>
\Bumpeq	<code>\Bumpeq</code>	\lesseqgtr	<code>\lesseqgtr</code>	\supseteq	<code>\supseteq</code>
\circeq	<code>\circeq</code>	\lesseqqgtr	<code>\lesseqqgtr</code>	\therefore	<code>\therefore</code>
\curlyeqprec	<code>\curlyeqprec</code>	\lessgtr	<code>\lessgtr</code>	\thickapprox	<code>\thickapprox</code>
\curlyeqsucc	<code>\curlyeqsucc</code>	\lesssim	<code>\lesssim</code>	\thicksim	<code>\thicksim</code>
\doteqdot	<code>\doteqdot</code>	\lll	<code>\lll</code>	\trianglelefteq	<code>\trianglelefteq</code>
\eqcirc	<code>\eqcirc</code>	\pitchfork	<code>\pitchfork</code>	\trianglelefteq	<code>\trianglelefteq</code>
\eqslantgtr	<code>\eqslantgtr</code>	\precapprox	<code>\precapprox</code>	\trianglerighteq	<code>\trianglerighteq</code>
\eqslantless	<code>\eqslantless</code>	\preccurlyeq	<code>\preccurlyeq</code>	\varpropto	<code>\varpropto</code>
\fallingdotseq	<code>\fallingdotseq</code>	\precsim	<code>\precsim</code>	\vartriangleleft	<code>\vartriangleleft</code>
\geqq	<code>\geqq</code>	\risingdotseq	<code>\risingdotseq</code>	\vartriangleright	<code>\vartriangleright</code>
\geqslant	<code>\geqslant</code>	\shortmid	<code>\shortmid</code>	\Vdash	<code>\Vdash</code>
\ggg	<code>\ggg</code>	\shortparallel	<code>\shortparallel</code>	\vDash	<code>\vDash</code>
\gtrapprox	<code>\gtrapprox</code>	\smallfrown	<code>\smallfrown</code>	\Vvdash	<code>\Vvdash</code>

TABLE 31: \mathcal{AMS} Negated Binary Relations

\napprox	<code>\napprox</code>	\nleqslant	<code>\nleqslant</code>	\ntrianglerighteq	<code>\ntrianglerighteq</code>
\nneq	<code>\nneq</code>	\nless	<code>\nless</code>	\nvdash	<code>\nvdash</code>
\nneqq	<code>\nneqq</code>	\nmid	<code>\nmid</code>	\nvDash	<code>\nvDash</code>
\nnsim	<code>\nnsim</code>	\nparallel	<code>\nparallel</code>	\nVDash	<code>\nVDash</code>
\nvertneqq	<code>\nvertneqq</code>	\nprec	<code>\nprec</code>	\preccurlyeq	<code>\preccurlyeq</code>
\napproxeq	<code>\napproxeq</code>	\npreceq	<code>\npreceq</code>	\precnsim	<code>\precnsim</code>
\lneq	<code>\lneq</code>	\nshortmid	<code>\nshortmid</code>	\subsetneq	<code>\subsetneq</code>
\lneqq	<code>\lneqq</code>	\nshortparallel	<code>\nshortparallel</code>	\subsetneqq	<code>\subsetneqq</code>
\lnsim	<code>\lnsim</code>	\nsim	<code>\nsim</code>	\succapprox	<code>\succapprox</code>
\lvertneqq	<code>\lvertneqq</code>	\nsubseteq	<code>\nsubseteq</code>	\succnsim	<code>\succnsim</code>
\ncong	<code>\ncong</code>	\nsucc	<code>\nsucc</code>	\supsetneq	<code>\supsetneq</code>
\ngeq	<code>\ngeq</code>	\nsucceq	<code>\nsucceq</code>	\supsetneqq	<code>\supsetneqq</code>
\ngeqq	<code>\ngeqq</code>	\nsupseteq	<code>\nsupseteq</code>	\varsubsetneq	<code>\varsubsetneq</code>
\ngeqslant	<code>\ngeqslant</code>	\nsupseteqq	<code>\nsupseteqq</code>	\varsubsetneqq	<code>\varsubsetneqq</code>
\ngtr	<code>\ngtr</code>	\ntriangleleft	<code>\ntriangleleft</code>	\varsupsetneq	<code>\varsupsetneq</code>
\nleq	<code>\nleq</code>	\ntrianglelefteq	<code>\ntrianglelefteq</code>	\varsupsetneqq	<code>\varsupsetneqq</code>
\nleqq	<code>\nleqq</code>	\ntriangleright	<code>\ntriangleright</code>		

TABLE 32: `stmaryrd` Binary Relations

\inplus	<code>\inplus</code>	\subsetplus	<code>\subsetplus</code>	\trianglelefteqslant	<code>\trianglelefteqslant</code>
\niplus	<code>\niplus</code>	\supsetplus	<code>\supsetplus</code>	\trianglerighteqslant	<code>\trianglerighteqslant</code>
\subsetplus	<code>\subsetplus</code>	\supsetplus	<code>\supsetplus</code>		

TABLE 33: stmaryrd Negated Binary Relations

\ntrianglelefteqslant `\ntrianglelefteqslant` \ntrianglerighteqslant `\ntrianglerighteqslant`

TABLE 34: txfonts/pxfonts Binary Relations

\boxdotleft	<code>\boxdotLeft</code>	\lrcorner	<code>\lrcorner</code>	\npreceq	<code>\npreceq</code>
\boxdotleft	<code>\boxdotleft</code>	\lrcorner	<code>\Mappedfromchar</code>	\nprec	<code>\nprec</code>
\boxdotright	<code>\boxdotright</code>	\lrcorner	<code>\mappedfromchar</code>	\nsimeq	<code>\nsimeq</code>
\boxdotright	<code>\boxdotRight</code>	\lrcorner	<code>\mmappedfromchar</code>	\nsqsubset	<code>\nsqsubset</code>
\boxleft	<code>\boxleft</code>	\lrcorner	<code>\Mmappedfromchar</code>	\nsqsubseteq	<code>\nsqsubseteq</code>
\boxleft	<code>\boxLeft</code>	\lrcorner	<code>\mmapstochar</code>	\nsqsupset	<code>\nsqsupset</code>
\boxright	<code>\boxRight</code>	\lrcorner	<code>\Mmapstochar</code>	\nsqsupseteq	<code>\nsqsupseteq</code>
\boxright	<code>\boxright</code>	\multimap	<code>\multimapboth</code>	\subsetneq	<code>\subsetneq</code>
\circleft	<code>\circleft</code>	\multimap	<code>\multimapbothvert</code>	\subseteq	<code>\subseteq</code>
\circright	<code>\circright</code>	\multimap	<code>\multimapdot</code>	\succapprox	<code>\succapprox</code>
\circleft	<code>\circleft</code>	\multimap	<code>\multimapdotboth</code>	\succcurlyeq	<code>\succcurlyeq</code>
\circleft	<code>\circleft</code>	\multimap	<code>\multimapdotbothA</code>	\succeq	<code>\succeq</code>
\circleft	<code>\circleft</code>	\multimap	<code>\multimapdotbothAvert</code>	\succsim	<code>\succsim</code>
\circright	<code>\circright</code>	\multimap	<code>\multimapdotbothB</code>	\supset	<code>\supset</code>
\colonapprox	<code>\colonapprox</code>	\multimap	<code>\multimapdotbothBvert</code>	\thickapprox	<code>\thickapprox</code>
\Colonapprox	<code>\Colonapprox</code>	\multimap	<code>\multimapdotbothvert</code>	\twoheadleftarrow	<code>\twoheadleftarrow</code>
\coloneq	<code>\coloneq</code>	\multimap	<code>\multimapdotinv</code>	\twoheadrightarrow	<code>\twoheadrightarrow</code>
\Coloneq	<code>\Coloneq</code>	\multimap	<code>\multimapinv</code>	\varpar	<code>\varpar</code>
\coloneqq	<code>\coloneqq</code>	\napprox	<code>\napprox</code>	\varparlinv	<code>\varparlinv</code>
\Colononeqq	<code>\Colononeqq</code>	\nasympt	<code>\nasympt</code>	\Vdash	<code>\Vdash</code>
\colonsim	<code>\colonsim</code>	\backsim	<code>\backsim</code>	\Nwarrow	<code>\Nwarrow</code>
\Colonlim	<code>\Colonlim</code>	\nbacksim	<code>\nbacksim</code>	\openjoin	<code>\openjoin</code>
\dashleftarrow	<code>\dashleftarrow</code>	\bumpeq	<code>\bumpeq</code>	\opentimes	<code>\opentimes</code>
\diamondleft	<code>\diamondleft</code>	\nbumpeq	<code>\nbumpeq</code>	\perp	<code>\perp</code>
\diamondleft	<code>\diamondLeft</code>	\nearrow	<code>\nearrow</code>	\preceq	<code>\preceq</code>
\diamondright	<code>\diamondright</code>	\nequiv	<code>\nequiv</code>	\precneq	<code>\precneq</code>
\diamondright	<code>\diamondRight</code>	\ngg	<code>\ngg</code>	\rJoin	<code>\rJoin</code>
\diamondleft	<code>\diamondleft</code>	\ngtrapprox	<code>\ngtrapprox</code>	\Rrightarrow	<code>\Rrightarrow</code>
\diamondleft	<code>\diamondLeft</code>	\ngtrless	<code>\ngtrless</code>	\Srightarrow	<code>\Srightarrow</code>
\diamondright	<code>\diamondright</code>	\ngtrsim	<code>\ngtrsim</code>	\strictfi	<code>\strictfi</code>
\diamondright	<code>\diamondRight</code>	\nlessapprox	<code>\nlessapprox</code>	\strictif	<code>\strictif</code>
\Eqcolon	<code>\Eqcolon</code>	\nlessgtr	<code>\nlessgtr</code>	\strictiff	<code>\strictiff</code>
\Eqcolon	<code>\Eqcolon</code>	\nlesssim	<code>\nlesssim</code>	\succeq	<code>\succeq</code>
\Eqqcolon	<code>\Eqqcolon</code>	\nll	<code>\nll</code>	\succneqq	<code>\succneqq</code>
\Eqqcolon	<code>\Eqqcolon</code>	\notin	<code>\notin</code>	\Svarrow	<code>\Svarrow</code>
\eqsim	<code>\eqsim</code>	\notin	<code>\notin</code>	\varparallel	<code>\varparallel</code>
\leftsquigarrow	<code>\leftsquigarrow</code>	\nprecapprox	<code>\nprecapprox</code>	\varparallelinv	<code>\varparallelinv</code>
\lJoin	<code>\lJoin</code>	\npreccurlyeq	<code>\npreccurlyeq</code>	\Vvdash	<code>\Vvdash</code>

TABLE 35: Arrow Symbols

\Downarrow	<code>\Downarrow</code>	\longleftarrow	<code>\longleftarrow</code>	\Rightarrow	<code>\Rightarrow</code>
\downarrow	<code>\downarrow</code>	\Lleftarrow	<code>\Lleftarrow</code>	\rightarrow	<code>\rightharpoondown</code>
\hookleftarrow	<code>\hookleftarrow</code>	\longleftrightarrow	<code>\longleftrightarrow</code>	\rightarrow	<code>\rightharpoonup</code>
\hookrightarrow	<code>\hookrightarrow</code>	\Lrightarrow	<code>\Lrightarrow</code>	\rightleftharpoons	<code>\rightleftharpoons</code>
\leadsto^*	<code>\leadsto*</code>	\mapsto	<code>\mapsto</code>	\searrow	<code>\searrow</code>
\Leftarrow	<code>\Leftarrow</code>	\longrightarrow	<code>\longrightarrow</code>	\swarrow	<code>\swarrow</code>
\leftarrow	<code>\leftarrow</code>	\Longrightarrow	<code>\Longrightarrow</code>	\Uparrow	<code>\Uparrow</code>
\leftharpoondown	<code>\leftharpoondown</code>	\mapsto	<code>\mapsto</code>	\Uparrow	<code>\Uparrow</code>
\leftharpoonup	<code>\leftharpoonup</code>	\nearrow	<code>\nearrow</code>	\Downarrow	<code>\Downarrow</code>
\Leftrightarrow	<code>\Leftrightarrow</code>	\nrightarrow	<code>\nrightarrow</code>	\Downarrow	<code>\Downarrow</code>
\leftrightarrow	<code>\leftrightarrow</code>	\rightarrow	<code>\rightarrow</code>		

* Not predefined in $\text{\LaTeX} 2_{\epsilon}$. Use one of the packages `latexsym`, `amsfonts`, `amssymb`, `txfonts`, `pxfonts`, or `wasysym`.

TABLE 36: \mathcal{AMS} Arrows

\circlearrowleft	<code>\circlearrowleft</code>	\leftleftarrows	<code>\leftleftarrows</code>	\rightleftarrows	<code>\rightleftarrows</code>
\circlearrowright	<code>\circlearrowright</code>	\leftrightarrows	<code>\leftrightarrows</code>	\rightleftharpoons	<code>\rightleftharpoons</code>
\curvearrowleft	<code>\curvearrowleft</code>	\leftrightharpoons	<code>\leftrightharpoons</code>	\rightrightarrow	<code>\rightrightarrow</code>
\curvearrowright	<code>\curvearrowright</code>	\leftrightsquigarrow	<code>\leftrightsquigarrow</code>	\rightsquigarrow	<code>\rightsquigarrow</code>
\dashleftarrow	<code>\dashleftarrow</code>	\Lleftarrow	<code>\Lleftarrow</code>	\Rsh	<code>\Rsh</code>
\dashrightarrow	<code>\dashrightarrow</code>	\looparrowleft	<code>\looparrowleft</code>	\twoheadleftarrow	<code>\twoheadleftarrow</code>
\downdownarrows	<code>\downdownarrows</code>	\looparrowright	<code>\looparrowright</code>	\twoheadrightarrow	<code>\twoheadrightarrow</code>
\downharpoonleft	<code>\downharpoonleft</code>	\Lsh	<code>\Lsh</code>	\upharpoonleft	<code>\upharpoonleft</code>
\downharpoonright	<code>\downharpoonright</code>	\multimap	<code>\multimap</code>	\upharpoonright	<code>\upharpoonright</code>
\leftarrowtail	<code>\leftarrowtail</code>	\rightarrowtail	<code>\rightarrowtail</code>	\upuparrows	<code>\upuparrows</code>

TABLE 37: \mathcal{AMS} Negated Arrows

\nLeftarrow	<code>\nLeftarrow</code>	\nLeftrightarrow	<code>\nLeftrightarrow</code>	\nRightarrow	<code>\nRightarrow</code>
\nleftarrow	<code>\nleftarrow</code>	\nleftrightarrow	<code>\nleftrightarrow</code>	\nrightarrow	<code>\nrightarrow</code>

TABLE 38: `stmaryrd` Arrows

\leftarrowtriangle	<code>\leftarrowtriangle</code>	\Mapsfrom	<code>\Mapsfrom</code>	\shortdownarrow	<code>\shortdownarrow</code>
\leftarrowtriangle	<code>\leftarrowtriangle</code>	\mapsfrom	<code>\mapsfrom</code>	\shortleftarrow	<code>\shortleftarrow</code>
\rightarrowtriangle	<code>\rightarrowtriangle</code>	\Mapsto	<code>\Mapsto</code>	\shortrightarrow	<code>\shortrightarrow</code>
\lightning	<code>\lightning</code>	\nrightarrow	<code>\nrightarrow</code>	\shortuparrow	<code>\shortuparrow</code>
\Longmapsfrom	<code>\Longmapsfrom</code>	\nrightarrow	<code>\nrightarrow</code>	\ssearrow	<code>\ssearrow</code>
\longmapsfrom	<code>\longmapsfrom</code>	\rightarrowtriangle	<code>\rightarrowtriangle</code>	\sswarrow	<code>\sswarrow</code>
\Longmapsto	<code>\Longmapsto</code>	\rrparenthesis	<code>\rrparenthesis</code>		

TABLE 39: Log-like Symbols

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

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 7.3 for more information.

TABLE 40: \mathcal{AMS} Log-like Symbols

<code>injlim</code>	<code>\injlim</code>	<code>\lim_→</code>	<code>\varinjlim</code>	<code>\varinjlim</code>	<code>\varlimsup</code>
<code>projlim</code>	<code>\projlim</code>	<code>\lim_←</code>	<code>\varprojlim</code>	<code>\varprojlim</code>	<code>\varprojlim</code>

Load the `amsmath` package to get these symbols. See Section 7.3 for some additional comments regarding log-like symbols.

TABLE 41: Greek Letters

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

The remaining Greek majuscules can be produced with ordinary Latin letters. The symbol “M”, for instance, is used for both an uppcase “m” and an uppcase “ μ ”.

TABLE 42: \mathcal{AMS} Greek Letters

<code>F</code>	<code>\digamma</code>	\varkappa	<code>\varkappa</code>
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¹Michael J. Downes prefers the more general term, “atomic math objects”.

TABLE 43: txfonts/pxfonts Upright Greek Letters

α	<code>\alphaup</code>	θ	<code>\thetaaup</code>	π	<code>\piup</code>	ϕ	<code>\phiup</code>
β	<code>\betaaup</code>	ϑ	<code>\varthetaaup</code>	ϖ	<code>\varpiup</code>	φ	<code>\varphiup</code>
γ	<code>\gammaup</code>	ι	<code>\iotaup</code>	ρ	<code>\rhoup</code>	χ	<code>\chiup</code>
δ	<code>\deltaaup</code>	κ	<code>\kappaaup</code>	ϱ	<code>\varrhoup</code>	ψ	<code>\psiup</code>
ϵ	<code>\epsilonup</code>	λ	<code>\lambdaaup</code>	σ	<code>\sigmaup</code>	ω	<code>\omegaup</code>
ε	<code>\varepsilonup</code>	μ	<code>\muup</code>	ς	<code>\varsigmaup</code>		
ζ	<code>\zetaaup</code>	ν	<code>\nuup</code>	τ	<code>\tauup</code>		
η	<code>\etaup</code>	ξ	<code>\xiup</code>	υ	<code>\upsilonup</code>		

TABLE 44: 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 45: \mathcal{AMS} Hebrew Letters

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

`\aleph` appears in Table 56 on page 23.

TABLE 46: Variable-sized Delimiters

$($	$($	$($	$)$	$)$	$)$	\uparrow	\uparrow	<code>\uparrow</code>	\Uparrow	\Uparrow	<code>\Uparrow</code>
$[$	$[$	$[$	$]$	$]$	$]$	\downarrow	\downarrow	<code>\downarrow</code>	\Downarrow	\Downarrow	<code>\Downarrow</code>
$\{$	$\{$	<code>\{</code>	$\}$	$\}$	<code>\}</code>	\updownarrow	\updownarrow	<code>\updownarrow</code>	\Updownarrow	\Updownarrow	<code>\Updownarrow</code>
\lfloor	\lfloor	<code>\lfloor</code>	\rfloor	\rfloor	<code>\rfloor</code>	\lceil	\lceil	<code>\lceil</code>	\rceil	\rceil	<code>\rceil</code>
\langle	\langle	<code>\langle</code>	\rangle	\rangle	<code>\rangle</code>	$/$	$/$	<code>/</code>	\backslash	\backslash	<code>\backslash</code>
$ $	$ $	$ $	$\ $	$\ $	<code>\ </code>						

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

TABLE 47: Large, Variable-sized Delimiters

$\left($	$\left.$	\int	$\left($	$\right)$	$\right)$	$\left($	$\left($
\backslash	\backslash	\backslash	\backslash	\backslash	\backslash	\backslash	\backslash
\moustache	\moustache	\moustache	\moustache	\moustache	\moustache	\moustache	\moustache
\rgroup	\lgroup						

\uparrow	$\uparrow\uparrow$	\Uparrow	\updownarrow
\arrowvert	\Arrowvert	\bracevert	
\backslash	\backslash	\backslash	\backslash
\arrowvert	\Arrowvert	\bracevert	

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

TABLE 48: \mathcal{AMS} Delimiters

\ulcorner	\urcorner	\llcorner	\lrcorner
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TABLE 49: `stmaryrd` Delimiters

\Lbag	\Rbag	\lbag	\rbag
\llceil	\rrceil	\llfloor	\rrfloor
\llparenthesis	\rrparenthesis		

TABLE 50: Variable-Sized `stmaryrd` Delimiters

\llbracket	\llbracket	\llbracket	\llbracket
\llbracket	\llbracket	\llbracket	\llbracket
\llbracket	\llbracket	\llbracket	\llbracket

TABLE 51: `textcomp` Text-Mode Delimiters

\langle	\langle	\langle	\langle
\langle	\langle	\langle	\langle
\langle	\langle	\langle	\langle

TABLE 52: Math-Mode Accents

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

Also note the existence of `\imath` and `\jmath`, which produce dotless versions of “*i*” and “*j*”. (See Table 56 on the following page.) These are useful when the accent is supposed to replace the dot. For example, “`\hat{\imath}`” produces a correct “*î*”, while “`\hat{i}`” would yield the rather odd-looking “*î*”.

TABLE 53: Some Other Constructions

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

TABLE 54: $\mathcal{A}\mathcal{M}\mathcal{S}$ Extensible Arrow Accents

\overleftarrow{a}	<code>\overleftarrow{a}</code>	\overrightarrow{a}	<code>\overrightarrow{a}</code>	\overleftrightarrow{a}	<code>\overleftrightarrow{a}</code>
\underlineleftarrow{a}	<code>\underlineleftarrow{a}</code>	\underrightarrow{a}	<code>\underrightarrow{a}</code>	\underleftrightarrow{a}	<code>\underleftrightarrow{a}</code>

These accents are called “extensible” because they stretch to fit their argument. For example, “`\underrightarrow{ABCdef}`” produces $\underline{\underline{ABCdef}}$.

TABLE 55: Punctuation Symbols (Math Mode)

<code>,</code>	<code>,</code>	<code>;</code>	<code>;</code>	<code>:</code>	<code>\colon*</code>	<code>.</code>	<code>\ldotp</code>	<code>\cdot</code>	<code>\cdot</code>
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* While “:” is valid in math mode, `\colon` uses different surrounding spacing. See Section 7.3 and the Short Math Guide for \LaTeX [Dow00] for more information on math-mode spacing.

TABLE 56: Miscellaneous $\text{\LaTeX}_{2\epsilon}$ Symbols

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

* Not predefined in $\text{\LaTeX}_{2\epsilon}$. Use one of the packages `latexsym`, `amsfonts`, `amssymb`, `txfonts`, `pxfonts`, or `wasysym`.

TABLE 57: Miscellaneous $\mathcal{A}\mathcal{M}\mathcal{S}$ Symbols

\sphericalangle	<code>\angle</code>	\complement	<code>\complement</code>	\sphericalangle	<code>\measuredangle</code>
\backslash	<code>\backprime</code>	\diagdown	<code>\diagdown</code>	\mho	<code>\mho</code>
\mathbb{k}	<code>\Bbbk</code>	\diagup	<code>\diagup</code>	\nexists	<code>\nexists</code>
\star	<code>\bigstar</code>	\eth	<code>\eth</code>	\sphericalangle	<code>\sphericalangle</code>
\blacklozenge	<code>\blacklozenge</code>	\Finv	<code>\Finv</code>	\square	<code>\square</code>
\blacksquare	<code>\blacksquare</code>	\Game	<code>\Game</code>	∇	<code>\triangledown</code>
\blacktriangle	<code>\blacktriangle</code>	\hbar	<code>\hbar</code>	\emptyset	<code>\varnothing</code>
\blacktriangledown	<code>\blacktriangledown</code>	\hslash	<code>\hslash</code>	\triangle	<code>\vartriangle</code>
\textcircled{S}	<code>\circledS</code>	\lozenge	<code>\lozenge</code>		

TABLE 58: $\mathcal{A}\mathcal{M}\mathcal{S}$ Commands Defined to Work in Both Math and Text Mode

\checkmark	<code>\checkmark</code>	\textcircled{R}	<code>\circledR</code>	†	<code>\maltese</code>
--------------	-------------------------	-------------------	------------------------	------------	-----------------------

TABLE 59: stmaryrd Extension Characters

\curvearrowright	<code>\Arrownot</code>	\mapsto	<code>\Mapsfromchar</code>	\mapsto	<code>\Mapstochar</code>
\curvearrowleft	<code>\arrownot</code>	\mapsto	<code>\mapsfromchar</code>		

TABLE 60: Other wasysym Math-Mode Symbols

\gtrsim	<code>\apprge</code>	\Join	<code>\Join</code>	\mho	<code>\mho</code>	\sqsupset	<code>\sqsupset</code>
\lesssim	<code>\apprle</code>	\leadsto	<code>\leadsto</code>	\circ	<code>\ocircle</code>	\unlhd	<code>\unlhd</code>
\square	<code>\Box</code>	\triangleleft	<code>\lhd</code>	\triangleright	<code>\rhd</code>	\unrhd	<code>\unrhd</code>
\diamond	<code>\Diamond</code>	\blacktriangleleft	<code>\LHD</code>	\blacktriangleright	<code>\RHD</code>	\propto	<code>\wasypropto</code>
\neg	<code>\invneg</code>	\oplus	<code>\logof</code>	\sqsubset	<code>\sqsubset</code>		

TABLE 61: Miscellaneous txfonts/pxfonts Symbols

\blacklozenge	<code>\Diamondblack</code>	λ	<code>\lambdaslash</code>	\clubsuit	<code>\varclubsuit</code>	\spadesuit	<code>\varspadesuit</code>
\diamond	<code>\Diamonddot</code>	¢	<code>\mathcent</code>	\blacklozenge	<code>\vardiamondsuit</code>		
λ	<code>\lambdabar</code>	£	<code>\mathsterling</code>	\heartsuit	<code>\varheartsuit</code>		

TABLE 62: textcomp Text-Mode Math and Science Symbols

$^{\circ}\text{C}$	<code>\textcelsius</code>	$-$	<code>\textminus</code>	$\sqrt{\quad}$	<code>\textsurd</code>
$^{\circ}$	<code>\textdegree</code>	μ	<code>\textmu</code>	$\frac{3}{4}$	<code>\textthreequarters</code>
\div	<code>\textdiv</code>	Ω	<code>\textohm</code>	3	<code>\textthreesuperior</code>
\downarrow	<code>\textdownarrow</code>	$\frac{1}{2}$	<code>\textonehalf</code>	\times	<code>\texttimes</code>
$/$	<code>\textfractionsolidus</code>	$\frac{1}{4}$	<code>\textonequarter</code>	2	<code>\texttwosuperior</code>
\leftarrow	<code>\textleftarrow</code>	1	<code>\textonesuperior</code>	\uparrow	<code>\textuparrow</code>
\neg	<code>\textlnot</code>	\pm	<code>\textpm</code>		
\mho	<code>\textmho</code>	\rightarrow	<code>\textrightarrow</code>		

TABLE 63: marvosym Math Symbols

0	<code>\MVZero</code>	2	<code>\MVTwo</code>	4	<code>\MVFfour</code>	6	<code>\MVSix</code>	8	<code>\MVEight</code>
1	<code>\MVOne</code>	3	<code>\MVThree</code>	5	<code>\MVFfive</code>	7	<code>\MVSeven</code>	9	<code>\MVNine</code>
	<code>\Anglesign</code>		<code>\Squaredot</code>		<code>\Vectorarrowhigh</code>				
	<code>\Corresponds</code>		<code>\Vectorarrow</code>						

TABLE 64: ar Aspect Ratio Symbol

 \mathcal{R} `\AR`

TABLE 65: usly Contradiction and Other Symbols

 \blitza `\blitza` \blitzb `\blitzb` \blitzc `\blitzc` \blitzd `\blitzd` \blitze `\blitze` \oplus `\odplus`

TABLE 66: Math Alphabets

		Required package
$ABCdef123$	<code>\mathrm{ABCdef123}</code>	<i>none</i>
$ABCdef123$	<code>\mathit{ABCdef123}</code>	<i>none</i>
$ABCdef123$	<code>\mathnormal{ABCdef123}</code>	<i>none</i>
\mathcal{ABC}	<code>\mathcal{ABC}</code>	<i>none</i>
\mathscr{ABC}	<code>\mathscr{ABC}</code>	<code>mathrsfs</code>
\mathcal{ABC}	<code>\mathcal{ABC}</code>	<code>euscript</code> with option: <code>mathcal</code>
	<i>or</i> <code>\mathscr{ABC}</code>	<code>euscript</code> with option: <code>mathscr</code>
$\mathcal{ABC}def123$	<code>\mathpzc{ABCdef123}</code>	<i>none</i> ; manually defined*
\mathbf{ABC}	<code>\mathbf{ABC}</code>	<code>amsfonts</code> , <code>amssymb</code> , <code>txfonts</code> , or <code>pxfonts</code>
\mathbf{ABC}	<code>\varmathbf{ABC}</code>	<code>txfonts</code> or <code>pxfonts</code>
$\mathbf{ABC}def123$	<code>\mathbf{ABCdef123}</code>	<code>bbold</code> or <code>mathbbol</code> †
$\mathbf{ABC}def12$	<code>\mathbf{ABCdef12}</code>	<code>bbm</code>
$\mathbf{ABC}def12$	<code>\mathbf{ABCdef12}</code>	<code>bbm</code>
$\mathbf{ABC}def12$	<code>\mathbf{ABCdef12}</code>	<code>bbm</code>
$\mathbf{ABC}1$	<code>\mathbf{ABC1}</code>	<code>dsfont</code>
$\mathbf{ABC}1$	<code>\mathbf{ABC1}</code>	<code>dsfont</code> with option: <code>sans</code>
$\mathfrak{ABC}def123$	<code>\mathfrak{ABCdef123}</code>	<code>eufrak</code>
$\mathfrak{ABC}def123$	<code>\textfrak{ABCdef123}</code>	<code>yfonts</code>
$\mathfrak{ABC}def123$	<code>\textswab{ABCdef123}</code>	<code>yfonts</code>

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

† The `mathbbol` package defines some additional blackboard bold characters: parentheses, square brackets, angle brackets, and—if the `bbgreek` option is passed to `mathbbol`—Greek letters. For instance, “ $\llbracket \alpha \beta \rrbracket \gg$ ” is produced by “`\mathbf{Llbracket\llbracket\alpha\beta\rrbracket\gg}`”.

4 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 67: wasysym Electrical and Physical Symbols

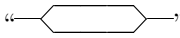

~ \AC ≈ \VHF ~~~~~ \photon ≈ \HF ∞∞∞∞∞ \gluon

TABLE 68: 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”.

TABLE 69: wasysym Astronomical Symbols

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

TABLE 70: marvosym Astronomical Symbols

♁ \Mercury ♃ \Mars ♆ \Uranus ☉ \Sun
 ♀ \Venus ♃ \Jupiter ♆ \Neptune ☾ \Moon
 ♁ \Earth ♄ \Saturn ♅ \Pluto

TABLE 71: wasysym Astrological Symbols

\AA	<code>\aries</code>	$\text{\textcircled{C}}$	<code>\cancer</code>	\textasciitilde	<code>\libra</code>	$\text{\textcircled{S}}$	<code>\capricornus</code>
\textasciitilde	<code>\taurus</code>	$\text{\textcircled{L}}$	<code>\leo</code>	\textasciitilde	<code>\scorpio</code>	$\text{\textcircled{A}}$	<code>\aquarius</code>
\textasciitilde	<code>\gemini</code>	$\text{\textcircled{V}}$	<code>\virgo</code>	\textasciitilde	<code>\sagittarius</code>	$\text{\textcircled{P}}$	<code>\pisces</code>
		$\text{\textcircled{J}}$	<code>\conjunction</code>	$\text{\textcircled{O}}$	<code>\opposition</code>		

TABLE 72: marvosym Astrological Symbols

\AA	<code>\Aries</code>	$\text{\textcircled{C}}$	<code>\Cancer</code>	\textasciitilde	<code>\Libra</code>	$\text{\textcircled{S}}$	<code>\Capricorn</code>
\textasciitilde	<code>\Taurus</code>	$\text{\textcircled{L}}$	<code>\Leo</code>	\textasciitilde	<code>\Scorpio</code>	$\text{\textcircled{A}}$	<code>\Aquarius</code>
\textasciitilde	<code>\Gemini</code>	$\text{\textcircled{V}}$	<code>\Virgo</code>	\textasciitilde	<code>\Sagittarius</code>	$\text{\textcircled{P}}$	<code>\Pisces</code>

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

TABLE 73: wasysym APL Symbols

\square	<code>\APLbox</code>	\boxplus	<code>\APLinv</code>	\star	<code>\APLstar</code>
$\text{\textcircled{A}}$	<code>\APLcomment</code>	\boxleftarrow	<code>\APLleftarrowbox</code>	Δ	<code>\APLup</code>
∇	<code>\APLdown</code>	\boxtimes	<code>\APLlog</code>	\boxrightarrow	<code>\APLuparrowbox</code>
\boxdownarrow	<code>\APLdownarrowbox</code>	$-$	<code>\APLminus</code>	\textasciitilde	<code>\notbackslash</code>
\boxuparrow	<code>\APLinput</code>	\boxrightarrow	<code>\APLrightarrowbox</code>	\neq	<code>\notslash</code>

TABLE 74: wasysym APL Modifiers

`\APLcirc{}` `\APLnot{}` `\APLvert{}`

TABLE 75: marvosym Computer Hardware Symbols

$\text{\textcircled{M}}$	<code>\ComputerMouse</code>	$\text{\textcircled{P}}$	<code>\ParallelPort</code>	$\text{\textcircled{S}}$	<code>\SerialInterface</code>
$\text{\textcircled{K}}$	<code>\Keyboard</code>	$\text{\textcircled{R}}$	<code>\Printer</code>	$\text{\textcircled{S}}$	<code>\SerialPort</code>

TABLE 76: ASCII Control Characters (IBM)

☉	\SOH	•	\BEL	↵	\CR	␣	\DCc	↓	\EM	▼	\US
⊕	\STX	■	\BS	␣	\SO	␣	\DCd	→	\SUB		\splitvert
♥	\ETX	○	\HT	✳	\SI	§	\NAK	←	\ESC	△	\DEL
♦	\EOT	▣	\LF	▶	\DLE	—	\SYN	L	\FS		
♣	\ENQ	♂	\VT	◀	\DCa	‡	\ETB	↔	\GS		
♠	\ACK	♀	\FF	‡	\DCb	↑	\CAN	▲	\RS		

SOH, STX, ETX, ..., US are the names of ASCII characters 1–31. DEL is the name of ASCII character 127. \splitvert doesn't correspond to a control character but is merely the “|” character shown IBM style.

These characters require the `ascii` package and must be entered with the `ascii` font in effect, for example, “{\ascii\STX}”. See the `ascii` package documentation for more information.

TABLE 77: marvosym Communication Symbols

✉	\Email	☎	\fax	📠	\Faxmachine	⚡	\Lightning	🚗	\Pickup
⚡	\Emailct	📠	\FAX	✉	\Letter	📞	\Mobilefone	☎	\Telefon

TABLE 78: marvosym Engineering Symbols

≡	\Beam	↓	\Force	●	\Octosteel	I	\RoundedTTsteel
△	\Bearing	●	\Hexasteel	□	\Rectpipe	□	\Squarepipe
○	\Circpipe	↺	\Lefttorque	■	\Rectsteel	■	\Squaresteel
●	\Circsteel	≡	\Lineload	↻	\Righttorque	T	\Tsteel
△	\Fixedbearing	△	\Loosebearing	T	\RoundedLsteel	I	\TTsteel
—	\Flatsteel	L	\Lsteel	L	\RoundedTsteel		

TABLE 79: marvosym Biological Symbols

♀	\Female	♂	\FemaleMale	♂	\MALE	○	\Neutral
♀	\FEMALE	♂	\Hermaphrodite	♂	\Male		
♀	\FemaleFemale	♂	\HERMAPHRODITE	♂	\MaleMale		

TABLE 80: marvosym Safety-Related Symbols

☠	\Biohazard	⚠	\CEsign	☢	\Explosionsafe	☣	\Radioactivity
☞	\BSEfree	⚠	\Estatically	☞	\Laserbeam	⊛	\Stopsign

5 Dingbats

Dingbats are symbols such as stars, arrows, and geometric shapes. They are commonly used as bullets in itemized lists or, more generally, as a means to draw attention to the text that follows.

The `pifont` dingbat package warrants special mention. Among other capabilities, `pifont` provides a \LaTeX interface to the PostScript Zapf Dingbats font. However, rather than name each of the dingbats individually, `pifont` merely provides a single `\ding` command, which outputs the character that lies at a given position in the font. The consequence is that the `pifont` symbols can't be listed by name in this document's index, so be mindful of that fact when searching for a particular symbol.

TABLE 81: `bbding` Arrows






	<code>\ArrowBoldDownRight</code>		<code>\ArrowBoldRightShort</code>		<code>\ArrowBoldUpRight</code>
	<code>\ArrowBoldRightCircled</code>		<code>\ArrowBoldRightStrobe</code>		

TABLE 82: `pifont` Arrows











































	<code>\ding{212}</code>		<code>\ding{221}</code>		<code>\ding{230}</code>		<code>\ding{239}</code>		<code>\ding{249}</code>
	<code>\ding{213}</code>		<code>\ding{222}</code>		<code>\ding{231}</code>		<code>\ding{241}</code>		<code>\ding{250}</code>
	<code>\ding{214}</code>		<code>\ding{223}</code>		<code>\ding{232}</code>		<code>\ding{242}</code>		<code>\ding{251}</code>
	<code>\ding{215}</code>		<code>\ding{224}</code>		<code>\ding{233}</code>		<code>\ding{243}</code>		<code>\ding{252}</code>
	<code>\ding{216}</code>		<code>\ding{225}</code>		<code>\ding{234}</code>		<code>\ding{244}</code>		<code>\ding{253}</code>
	<code>\ding{217}</code>		<code>\ding{226}</code>		<code>\ding{235}</code>		<code>\ding{245}</code>		<code>\ding{254}</code>
	<code>\ding{218}</code>		<code>\ding{227}</code>		<code>\ding{236}</code>		<code>\ding{246}</code>		
	<code>\ding{219}</code>		<code>\ding{228}</code>		<code>\ding{237}</code>		<code>\ding{247}</code>		
	<code>\ding{220}</code>		<code>\ding{229}</code>		<code>\ding{238}</code>		<code>\ding{248}</code>		

TABLE 83: `marvosym` Scissors







	<code>\Cutleft</code>		<code>\Cutright</code>		<code>\Leftscissors</code>
	<code>\Cutline</code>		<code>\Kutline</code>		<code>\Rightscissors</code>

TABLE 84: `bbding` Scissors









	<code>\ScissorHollowLeft</code>		<code>\ScissorLeftBrokenTop</code>
	<code>\ScissorHollowRight</code>		<code>\ScissorRight</code>
	<code>\ScissorLeft</code>		<code>\ScissorRightBrokenBottom</code>
	<code>\ScissorLeftBrokenBottom</code>		<code>\ScissorRightBrokenTop</code>

TABLE 85: `pifont` Scissors

	<code>\ding{33}</code>		<code>\ding{34}</code>		<code>\ding{35}</code>		<code>\ding{36}</code>
-------------------------------------------------------------------------------------	------------------------	-------------------------------------------------------------------------------------	------------------------	-------------------------------------------------------------------------------------	------------------------	---------------------------------------------------------------------------------------	------------------------

TABLE 86: dingbat Pencils



	<code>\largepencil</code>		<code>\smallpencil</code>
-----------------------------------------------------------------------------------	---------------------------	-----------------------------------------------------------------------------------	---------------------------

TABLE 87: bbding Pencils and Nibs











	<code>\NibLeft</code>		<code>\PencilLeft</code>		<code>\PencilRightDown</code>
	<code>\NibRight</code>		<code>\PencilLeftDown</code>		<code>\PencilRightUp</code>
	<code>\NibSolidLeft</code>		<code>\PencilLeftUp</code>		
	<code>\NibSolidRight</code>		<code>\PencilRight</code>		

TABLE 88: pifont Pencils and Nibs





	<code>\ding{46}</code>	<code>=</code>	<code>\ding{47}</code>		<code>\ding{48}</code>		<code>\ding{49}</code>		<code>\ding{50}</code>
-----------------------------------------------------------------------------------	------------------------	----------------	------------------------	-----------------------------------------------------------------------------------	------------------------	-----------------------------------------------------------------------------------	------------------------	-------------------------------------------------------------------------------------	------------------------

TABLE 89: dingbat Hands








	<code>\leftpointright</code>		<code>\rightpointleft</code>		<code>\rightpointright</code>
	<code>\leftthumbsdown</code>		<code>\rightthumbsdown</code>		
	<code>\leftthumbsup</code>		<code>\rightthumbsup</code>		

TABLE 90: bbding Hands










	<code>\HandCuffLeft</code>		<code>\HandCuffRightUp</code>		<code>\HandPencilLeft</code>
	<code>\HandCuffLeftUp</code>		<code>\HandLeft</code>		<code>\HandRight</code>
	<code>\HandCuffRight</code>		<code>\HandLeftUp</code>		<code>\HandRightUp</code>

TABLE 91: pifont Hands





	<code>\ding{42}</code>		<code>\ding{43}</code>		<code>\ding{44}</code>		<code>\ding{45}</code>
-------------------------------------------------------------------------------------	------------------------	-------------------------------------------------------------------------------------	------------------------	-------------------------------------------------------------------------------------	------------------------	---------------------------------------------------------------------------------------	------------------------

TABLE 92: bbding Crosses and Plusses











	<code>\Cross</code>		<code>\CrossOpenShadow</code>		<code>\PlusOutline</code>
	<code>\CrossBoldOutline</code>		<code>\CrossOutline</code>		<code>\PlusThinCenterOpen</code>
	<code>\CrossClowerTips</code>		<code>\Plus</code>		
	<code>\CrossMaltese</code>		<code>\PlusCenterOpen</code>		

TABLE 93: pifont Crosses and Plusses

⊕	<code>\ding{57}</code>	⊕	<code>\ding{59}</code>	†	<code>\ding{61}</code>	‡	<code>\ding{63}</code>
⊕	<code>\ding{58}</code>	⊕	<code>\ding{60}</code>	†	<code>\ding{62}</code>	‡	<code>\ding{64}</code>

TABLE 94: bbding Xs and Check Marks

✓	<code>\Checkmark</code>	✕	<code>\XSolid</code>	✕	<code>\XSolidBrush</code>
✓	<code>\CheckmarkBold</code>	✕	<code>\XSolidBold</code>		

TABLE 95: pifont Xs and Check Marks

✓	<code>\ding{51}</code>	✕	<code>\ding{53}</code>	✕	<code>\ding{55}</code>
✓	<code>\ding{52}</code>	✕	<code>\ding{54}</code>	✕	<code>\ding{56}</code>

TABLE 96: wasysym Xs and Check Marks

☑	<code>\CheckedBox</code>	□	<code>\Square</code>	☒	<code>\XBox</code>
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TABLE 97: pifont Circled Numbers

①	<code>\ding{172}</code>	①	<code>\ding{182}</code>	①	<code>\ding{192}</code>	①	<code>\ding{202}</code>
②	<code>\ding{173}</code>	②	<code>\ding{183}</code>	②	<code>\ding{193}</code>	②	<code>\ding{203}</code>
③	<code>\ding{174}</code>	③	<code>\ding{184}</code>	③	<code>\ding{194}</code>	③	<code>\ding{204}</code>
④	<code>\ding{175}</code>	④	<code>\ding{185}</code>	④	<code>\ding{195}</code>	④	<code>\ding{205}</code>
⑤	<code>\ding{176}</code>	⑤	<code>\ding{186}</code>	⑤	<code>\ding{196}</code>	⑤	<code>\ding{206}</code>
⑥	<code>\ding{177}</code>	⑥	<code>\ding{187}</code>	⑥	<code>\ding{197}</code>	⑥	<code>\ding{207}</code>
⑦	<code>\ding{178}</code>	⑦	<code>\ding{188}</code>	⑦	<code>\ding{198}</code>	⑦	<code>\ding{208}</code>
⑧	<code>\ding{179}</code>	⑧	<code>\ding{189}</code>	⑧	<code>\ding{199}</code>	⑧	<code>\ding{209}</code>
⑨	<code>\ding{180}</code>	⑨	<code>\ding{190}</code>	⑨	<code>\ding{200}</code>	⑨	<code>\ding{210}</code>
⑩	<code>\ding{181}</code>	⑩	<code>\ding{191}</code>	⑩	<code>\ding{201}</code>	⑩	<code>\ding{211}</code>

TABLE 98: wasysym Stars

☆	<code>\davidstar</code>	✱	<code>\hexstar</code>	✱	<code>\varhexstar</code>
---	-------------------------	---	-----------------------	---	--------------------------

TABLE 99: bbding Stars, Flowers, and Similar Shapes

	<code>\Asterisk</code>		<code>\FiveFlowerPetal</code>		<code>\JackStar</code>
	<code>\AsteriskBold</code>		<code>\FiveStar</code>		<code>\JackStarBold</code>
	<code>\AsteriskCenterOpen</code>		<code>\FiveStarCenterOpen</code>		<code>\SixFlowerAlternate</code>
	<code>\AsteriskRoundedEnds</code>		<code>\FiveStarConvex</code>		<code>\SixFlowerAltPetal</code>
	<code>\AsteriskThin</code>		<code>\FiveStarLines</code>		<code>\SixFlowerOpenCenter</code>
	<code>\AsteriskThinCenterOpen</code>		<code>\FiveStarOpen</code>		<code>\SixFlowerPetalDotted</code>
	<code>\DavidStar</code>		<code>\FiveStarOpenCircled</code>		<code>\SixFlowerPetalRemoved</code>
	<code>\DavidStarSolid</code>		<code>\FiveStarOpenDotted</code>		<code>\SixFlowerRemovedOpenPetal</code>
	<code>\EightAsterisk</code>		<code>\FiveStarOutline</code>		<code>\SixStar</code>
	<code>\EightFlowerPetal</code>		<code>\FiveStarOutlineHeavy</code>		<code>\SixteenStarLight</code>
	<code>\EightFlowerPetalRemoved</code>		<code>\FiveStarShadow</code>		<code>\Snowflake</code>
	<code>\EightStar</code>		<code>\FourAsterisk</code>		<code>\SnowflakeChevron</code>
	<code>\EightStarBold</code>		<code>\FourCflowerOpen</code>		<code>\SnowflakeChevronBold</code>
	<code>\EightStarConvex</code>		<code>\FourCflowerSolid</code>		<code>\Sparkle</code>
	<code>\EightStarTaper</code>		<code>\FourStar</code>		<code>\SparkleBold</code>
	<code>\FiveFlowerOpen</code>		<code>\FourStarOpen</code>		<code>\TwelveStar</code>






































































TABLE 100: pifont Stars, Flowers, and Similar Shapes

	<code>\ding{65}</code>		<code>\ding{74}</code>		<code>\ding{83}</code>		<code>\ding{92}</code>		<code>\ding{101}</code>
	<code>\ding{66}</code>		<code>\ding{75}</code>		<code>\ding{84}</code>		<code>\ding{93}</code>		<code>\ding{102}</code>
	<code>\ding{67}</code>		<code>\ding{76}</code>		<code>\ding{85}</code>		<code>\ding{94}</code>		<code>\ding{103}</code>
	<code>\ding{68}</code>		<code>\ding{77}</code>		<code>\ding{86}</code>		<code>\ding{95}</code>		<code>\ding{104}</code>
	<code>\ding{69}</code>		<code>\ding{78}</code>		<code>\ding{87}</code>		<code>\ding{96}</code>		<code>\ding{105}</code>
	<code>\ding{70}</code>		<code>\ding{79}</code>		<code>\ding{88}</code>		<code>\ding{97}</code>		<code>\ding{106}</code>
	<code>\ding{71}</code>		<code>\ding{80}</code>		<code>\ding{89}</code>		<code>\ding{98}</code>		<code>\ding{107}</code>
	<code>\ding{72}</code>		<code>\ding{81}</code>		<code>\ding{90}</code>		<code>\ding{99}</code>		
	<code>\ding{73}</code>		<code>\ding{82}</code>		<code>\ding{91}</code>		<code>\ding{100}</code>		

TABLE 101: wasysym Geometric Shapes

	<code>\hexagon</code>		<code>\octagon</code>		<code>\pentagon</code>		<code>\varhexagon</code>
--	-----------------------	--	-----------------------	--	------------------------	--	--------------------------

TABLE 102: ifsym Geometric Shapes

	<code>\BigCircle</code>		<code>\FilledBigTriangleRight</code>		<code>\SmallCircle</code>
	<code>\BigCross</code>		<code>\FilledBigTriangleUp</code>		<code>\SmallCross</code>
	<code>\BigDiamondshape</code>		<code>\FilledCircle</code>		<code>\SmallDiamondshape</code>
	<code>\BigHBar</code>		<code>\FilledDiamondShadowA</code>		<code>\SmallHBar</code>
	<code>\BigLowerDiamond</code>		<code>\FilledDiamondShadowC</code>		<code>\SmallLowerDiamond</code>
	<code>\BigRightDiamond</code>		<code>\FilledDiamondshape</code>		<code>\SmallRightDiamond</code>
	<code>\BigSquare</code>		<code>\FilledSmallCircle</code>		<code>\SmallSquare</code>
	<code>\BigTriangleDown</code>		<code>\FilledSmallDiamondshape</code>		<code>\SmallTriangleDown</code>
	<code>\BigTriangleLeft</code>		<code>\FilledSmallSquare</code>		<code>\SmallTriangleLeft</code>
	<code>\BigTriangleRight</code>		<code>\FilledSmallTriangleDown</code>		<code>\SmallTriangleRight</code>
	<code>\BigTriangleUp</code>		<code>\FilledSmallTriangleLeft</code>		<code>\SmallTriangleUp</code>
	<code>\BigVBar</code>		<code>\FilledSmallTriangleRight</code>		<code>\SmallVBar</code>
	<code>\Circle</code>		<code>\FilledSmallTriangleUp</code>		<code>\SpinDown</code>
	<code>\Cross</code>		<code>\FilledSquare</code>		<code>\SpinUp</code>
	<code>\DiamondShadowA</code>		<code>\FilledSquareShadowA</code>		<code>\Square</code>
	<code>\DiamondShadowB</code>		<code>\FilledSquareShadowC</code>		<code>\SquareShadowA</code>
	<code>\DiamondShadowC</code>		<code>\FilledTriangleDown</code>		<code>\SquareShadowB</code>
	<code>\Diamondshape</code>		<code>\FilledTriangleLeft</code>		<code>\SquareShadowC</code>
	<code>\FilledBigCircle</code>		<code>\FilledTriangleRight</code>		<code>\TriangleDown</code>
	<code>\FilledBigDiamondshape</code>		<code>\FilledTriangleUp</code>		<code>\TriangleLeft</code>
	<code>\FilledBigSquare</code>		<code>\HBar</code>		<code>\TriangleRight</code>
	<code>\FilledBigTriangleDown</code>		<code>\LowerDiamond</code>		<code>\TriangleUp</code>
	<code>\FilledBigTriangleLeft</code>		<code>\RightDiamond</code>		<code>\VBar</code>



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 7.2 for more information about constructing new symbols out of existing symbols.

TABLE 103: bbding Geometric Shapes

























	<code>\CircleShadow</code>		<code>\Rectangle</code>		<code>\SquareShadowTopLeft</code>
	<code>\CircleSolid</code>		<code>\RectangleBold</code>		<code>\SquareShadowTopRight</code>
	<code>\DiamondSolid</code>		<code>\RectangleThin</code>		<code>\SquareSolid</code>
	<code>\Ellipse</code>		<code>\Square</code>		<code>\TriangleDown</code>
	<code>\EllipseShadow</code>		<code>\SquareCastShadowBottomRight</code>		<code>\TriangleUp</code>
	<code>\EllipseSolid</code>		<code>\SquareCastShadowTopLeft</code>		
	<code>\HalfCircleLeft</code>		<code>\SquareCastShadowTopRight</code>		
	<code>\HalfCircleRight</code>		<code>\SquareShadowBottomRight</code>		

TABLE 104: pifont Geometric Shapes

●	<code>\ding{108}</code>	□	<code>\ding{111}</code>	□	<code>\ding{114}</code>	◆	<code>\ding{117}</code>	!	<code>\ding{121}</code>
○	<code>\ding{109}</code>	□	<code>\ding{112}</code>	▲	<code>\ding{115}</code>	▶	<code>\ding{119}</code>	■	<code>\ding{122}</code>
■	<code>\ding{110}</code>	□	<code>\ding{113}</code>	▼	<code>\ding{116}</code>		<code>\ding{120}</code>		

TABLE 105: manfnt Dangerous Bend Symbols

	<code>\dbend</code>		<code>\lhdbend</code>		<code>\reversedvideobend</code>
-----------------------------------------------------------------------------------	---------------------	-----------------------------------------------------------------------------------	-----------------------	-----------------------------------------------------------------------------------	---------------------------------

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

TABLE 106: marvosym Information Symbols














	<code>\Bicycle</code>		<code>\Football</code>		<code>\Pointinghand</code>
	<code>\Checkedbox</code>		<code>\Gentsroom</code>		<code>\Wheelchair</code>
	<code>\Clocklogo</code>		<code>\Industry</code>		<code>\Writinghand</code>
	<code>\Coffeecup</code>		<code>\Info</code>		
	<code>\Crossedbox</code>		<code>\Ladiesroom</code>		

TABLE 107: Miscellaneous dingbat Dingbats
























	<code>\anchor</code>		<code>\eye</code>		<code>\Sborder</code>
	<code>\carriagereturn</code>		<code>\filledsquarewithdots</code>		<code>\squarewithdots</code>
	<code>\checkmark</code>		<code>\satellitedish</code>		<code>\Zborder</code>

TABLE 108: Miscellaneous bbding Dingbats

	<code>\Envelope</code>		<code>\Peace</code>		<code>\PhoneHandset</code>		<code>\SunshineOpenCircled</code>
	<code>\OrnamentDiamondSolid</code>		<code>\Phone</code>		<code>\Plane</code>		<code>\Tape</code>

TABLE 109: Miscellaneous pifont Dingbats

	<code>\ding{37}</code>		<code>\ding{40}</code>		<code>\ding{164}</code>		<code>\ding{167}</code>		<code>\ding{171}</code>
	<code>\ding{38}</code>		<code>\ding{41}</code>		<code>\ding{165}</code>		<code>\ding{168}</code>		<code>\ding{169}</code>
	<code>\ding{39}</code>		<code>\ding{118}</code>		<code>\ding{166}</code>		<code>\ding{170}</code>		

6 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"?) 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 110: textcomp Genealogical Symbols

★	<code>\textborn</code>	∅	<code>\textdivorced</code>	∞	<code>\textmarried</code>
†	<code>\textdied</code>	🍃	<code>\textleaf</code>		

TABLE 111: wasysym General Symbols

0	<code>\agem0</code>	⌚	<code>\clock</code>	◀	<code>\LEFTarrow</code>	☺	<code>\smiley</code>
☒	<code>\ataribox</code>	¤	<code>\currency</code>	⚡	<code>\lightning</code>	☀	<code>\sun</code>
🔔	<code>\bell</code>	∅	<code>\diameter</code>	♂	<code>\male</code>	▲	<code>\UParrow</code>
☹	<code>\blacksmiley</code>	▼	<code>\DOWNarrow</code>	‰	<code>\permil</code>	↔	<code>\varangle</code>
👔	<code>\Bowtie</code>	♀	<code>\female</code>	☎	<code>\phone</code>	◻	<code>\wasylozenge</code>
⋮	<code>\brokenvert</code>	☹	<code>\frownie</code>	☞	<code>\pointer</code>	∴	<code>\wasytherefore</code>
¢	<code>\cent</code>	∅	<code>\invdiameter</code>	🎧	<code>\recorder</code>		
✓	<code>\checked</code>	✝	<code>\kreuz</code>	▶	<code>\RIGHTarrow</code>		

TABLE 112: wasysym Musical Notes

♪	<code>\eighthnote</code>	♩	<code>\halfnote</code>	♪	<code>\twonotes</code>	♩	<code>\fullnote</code>	♩	<code>\quarternote</code>
---	--------------------------	---	------------------------	---	------------------------	---	------------------------	---	---------------------------

See also `\flat`, `\sharp`, and `\natural` (Table 56).

TABLE 113: wasysym Circles

●	<code>\CIRCLE</code>	◐	<code>\LEFTcircle</code>	◑	<code>\RIGHTcircle</code>	↻	<code>\rightturn</code>
○	<code>\Circle</code>	◒	<code>\Leftcircle</code>	◓	<code>\Rightcircle</code>		
◐	<code>\LEFTCIRCLE</code>	◑	<code>\RIGHTCIRCLE</code>	↻	<code>\leftturn</code>		

TABLE 114: Miscellaneous manfnt Symbols























	<code>\manboldkidney</code>		<code>\manpenkidney</code>
	<code>\manconcentriccircles</code>		<code>\manquadrifolium</code>
	<code>\manconcentricdiamond</code>		<code>\manquartercircle</code>
	<code>\mancone</code>		<code>\manrotatedquadrifolium</code>
	<code>\mancube</code>		<code>\manrotatedquartercircle</code>
	<code>\manerrarrow</code>		<code>\manstar</code>
	<code>\manfilledquartercircle</code>		<code>\mantilt pennib</code>
	<code>\manhpennib</code>		<code>\mantriangledown</code>
	<code>\manimpossiblecube</code>		<code>\mantriangleright</code>
	<code>\mankidney</code>		<code>\mantriangleup</code>
	<code>\manlhpenkidney</code>		<code>\manvpennib</code>

TABLE 115: marvosym Navigation Symbols











	<code>\Forward</code>		<code>\MoveDown</code>		<code>\RewindToIndex</code>		<code>\ToTop</code>
	<code>\ForwardToEnd</code>		<code>\MoveUp</code>		<code>\RewindToStart</code>		
	<code>\ForwardToIndex</code>		<code>\Rewind</code>		<code>\ToBottom</code>		

TABLE 116: marvosym Laundry Symbols


















































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








TABLE 117: Other marvosym Symbols

	<code>\Ankh</code>		<code>\Cross</code>		<code>\Heart</code>		<code>\Smiley</code>
	<code>\Bat</code>		<code>\FHBOlogo</code>		<code>\MartinVogel</code>		<code>\Womanface</code>
	<code>\Bouquet</code>		<code>\FHBOLOGO</code>		<code>\Mundus</code>		<code>\Yinyang</code>
	<code>\Celtcross</code>		<code>\Frowny</code>		<code>\MVAt</code>		
	<code>\CircledA</code>		<code>\FullFHBO</code>		<code>\Rightarrow*</code>		

* Standard L^AT_EX 2_ε defines `\Rightarrow` to display “ \Rightarrow ”, while `marvosym` redefines it to display “ \rightarrow ” (or “ \cdot ” in math mode). This conflict can be problematic for math symbols defined in terms of `\Rightarrow`, such as `\Longlefttrightarrow`, which ends up looking like “ \Leftarrow ”.

TABLE 118: ifsym Weather Symbols

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

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 119: ifsym Alpine Symbols

























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

TABLE 120: ifsym Clocks

	<code>\Interval</code>		<code>\StopWatchStart</code>		<code>\VarClock</code>		<code>\Wecker</code>
	<code>\StopWatchEnd</code>		<code>\Taschenuhr</code>		<code>\VarTaschenuhr</code>		

















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 121: Other ifsym Symbols

	<code>\FilledSectioningDiamond</code>		<code>\Letter</code>		<code>\Radiation</code>
	<code>\Fire</code>		<code>\PaperLandscape</code>		<code>\SectioningDiamond</code>
	<code>\Irritant</code>		<code>\PaperPortrait</code>		<code>\Telephone</code>
	<code>\StrokeOne</code>		<code>\StrokeThree</code>		<code>\StrokeFive</code>
	<code>\StrokeTwo</code>		<code>\StrokeFour</code>		

In addition, `\Cube{1}...``\Cube{6}` produce dice with the corresponding number of spots:      

7 Additional Information

Unlike the previous sections of this document, Section 7 does not contain new symbol tables. Rather, it provides additional help in using the Comprehensive L^AT_EX Symbol List. First, it draws attention to 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 the spacing surrounding symbols in math mode. After that, it presents an ASCII and Latin 1 quick-reference guide, showing how to enter all of the standard ASCII/Latin 1 symbols in L^AT_EX. And finally, it lists some statistics about this document itself.

7.1 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, L^AT_EX will either output an error message or replace an earlier-defined symbol with a later-defined symbol. Table 122 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 122: Symbol Name Clashes

Symbol	L ^A T _E X 2 _ε	AMS	stmaryrd	wasysym	marvosym	bbding	ifsym	dingbat	wsuipa
<code>\angle</code>	∠	∠							
<code>\baro</code>			ϕ						ϑ
<code>\bigtriangledown</code>	▽		∇						
<code>\bigtriangleup</code>	△		Δ						
<code>\checkmark</code>		✓						✓	
<code>\Circle</code>				○			○		
<code>\Cross</code>					†	†	×		
<code>\Letter</code>					⊠		⊠		
<code>\lightning</code>			⚡	⚡					
<code>\Rightarrow</code>	⇒				→				
<code>\rightleftharpoons</code>	⇌	⇌							
<code>\Square</code>				□		□	□		
<code>\Sun</code>					☉		☀		
<code>\TriangleDown</code>						▼	▽		
<code>\TriangleUp</code>						▲	△		

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 the existence of Table 122, not impossible. The general procedure is to load the first package, rename the conflicting symbols, and then load the second package. Examine the L^AT_EX 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 of the symbols defined by `latexsym`, `textcomp`, the various \mathcal{AMS} symbol sets, and L^AT_EX 2_ε itself. The `txfonts` and `pxfonts` conflicts are not listed in Table 122 because they are designed to be compatible with the symbols they replace. Table 123 on the next page illustrates what “compatible” means in this context.

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}
```

TABLE 123: Example of a Benign Name Clash

Symbol	Default (Computer Modern)	txfonts (Times Roman)
R	\mathbb{R}	\mathbb{R}
<code>\textrecipe</code>	$\mathbb{R}_{\mathcal{C}}$	\mathbb{R}

7.2 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 I overlooked (or deemed unimportant). If there's some symbol package that you think should be included in the Comprehensive L^AT_EX Symbol List, please send me e-mail at 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. Sometimes, a symbol exists in a font, but there is no L^AT_EX binding for it. For example, the PostScript Symbol font contains a “`_`” symbol, which may be useful for representing a carriage return, but there is no package for accessing that symbol (as far as I know). To produce an unnamed symbol, you need to switch to the font explicitly with L^AT_EX 2_ε's low-level font commands [L^AT00] and use `\char` to request a specific character number in the font.²

Symbols that do not exist in any font can sometimes be fabricated out of existing symbols. The L^AT_EX 2_ε source file called `fontdef.dtx` contains a number of such definitions. For example, `\models` (see Table 29 on page 16) is defined in that file with:

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

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

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

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

As another example, `fontdef.dtx` composes the `\ddots` symbol (see Table 56 on page 23) out of three periods, raised 7 pt., 4 pt., and 1 pt., respectively:

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

`\p@` is a L^AT_EX 2_ε shortcut for “pt” or “1.0pt”. The remaining commands are defined in The T_EXbook [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@`:

²`pifont` defines a convenient `\Pisymbol` command for accessing symbols in PostScript fonts by number. For example, “`\Pisymbol{psy}{191}`” produces “`_`”.

```

\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 L^AT_EX 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 (“ \int ”), while `\ddashint` produces a double-dashed one (“ \int ”). 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 T_EX Users’ Group FAQ (<http://www.tex.ac.uk/faq>).

Accents are a special case of combining existing symbols to make new symbols. While various tables in this document show how to add an accent to an existing symbol, some applications, such as transliteration from non-Latin alphabets, require *multiple* accents per character. For instance, the creator of pdfT_EX writes his name as “Hàn Thê Thành”. The `wsuipa` package defines `\diatop` and `\diaunder` macros for putting one or more diacritics or accents above or below a given character. For example, `\diaunder[{\diatop[\`|=]}|\textsubdot{r}]` produces “ \acute{r} ”. See the `wsuipa` documentation for more information.

The accents package facilitates the fabrication of accents in math mode. Its `\accentset` command enables *any* character to be used as an accent. For instance, `\accentset{\star}{f}` produces “ $\overset{\star}{f}$ ” and `\accentset{e}{X}` produces “ $\overset{e}{X}$ ”. `\underaccent` does the same thing, but places the accent beneath the character. This enables constructs like `\underaccent{\tilde}{V}`, which produces “ $\underset{\tilde}{V}$ ”. `accents` provides other accent-related features as well; see the documentation for more information.

7.3 Math-mode spacing

Terms such as “binary operators”, “relations”, and “punctuation” in Section 3 primarily regard the surrounding spacing. (See the Short Math Guide for L^AT_EX [Dow00] for a nice exposition on the subject.) To use an symbol for a different purpose, you can use the T_EX 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 “ $3x + \mathord{\downarrow}$ ” to get the properly spaced “ $3x + \downarrow$ ” rather than the awkward-looking “ $3x + \downarrow$ ”. See The T_EXbook [Knu86] for more information.

The purpose of the “log-like symbols” in Tables 39 and 40 is to provide the correct amount of spacing around and within multiletter function names. Table 124 on the following page 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 “ $\max_{p \in P}$ ” as part of a displayed formula.

TABLE 124: Spacing Around/Within Log-like Symbols

\LaTeX expression	Output
$\$r \sin \theta\$$	$r \sin \theta$ (best)
$\$r \sin \theta\$$	$rsin\theta$
$\$r \mbox{\sin} \theta\$$	$rsin\theta$

7.4 ASCII and Latin 1 quick reference

Table 125 amalgamates data from various other tables in this document into a convenient reference for $\LaTeX 2_{\mathcal{E}}$ typesetting of ASCII characters, i.e., the characters available on a typical³ 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 $\LaTeX 2_{\mathcal{E}}$ command to typeset the character as a text character. And the fourth column lists the $\LaTeX 2_{\mathcal{E}}$ command to typeset the character within a $\texttt{\texttt{...}}$ command (or, more generally, when $\texttt{\ttfamily}$ is in effect).

TABLE 125: $\LaTeX 2_{\mathcal{E}}$ ASCII Table

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

The following are some additional notes about the contents of Table 125:

- $\texttt{\textquotedbl}$ is not available in the OT1 font encoding.
- The characters “<”, “>”, and “|” do work as expected in math mode, although they produce, respectively,

³typical for the United States, at least

“ı”, “ı̇”, and “—” in text mode.⁴ Hence, $\$<\$, \$>\$,$ and $\$|\$$ serve as a terser alternative to `\textless`, `\textgreater`, and `\textbar`. Note that for typesetting metavariables, many people prefer `\textlangle` and `\textrangle` to `\textless` and `\textgreater`, i.e., “*<filename>*” instead of “*<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 `\textbackslash` 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 29 on page 16), 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 additional nice features.
- The IBM version of ASCII characters 1 to 31 can be typeset using the `ascii` package. See Table 76 on page 28.
- To replace ‘ and ’ with the more computer-like (and more visibly distinct) ` and ' within a `verbatim` environment, use the `upquote` package. Outside of `verbatim`, you can use `\char18` and `\char13` to get the modified quote characters. (The former is actually a grave accent.)

Similar to Table 125, Table 126 on the following page is an amalgamation of data from other tables in this document. While Table 125 shows how to typeset the 7-bit ASCII character set, Table 126 shows the Latin 1 (Western European) character set, also known as ISO-8859-1.

The following are some additional notes about the contents of Table 126:

- A “(tc)” after a symbol name means that the `textcomp` package must be loaded to access that symbol. A “(T1)” means that the symbol needs the T1 font encoding. The `fontenc` package can change the font encoding document-wide.
- Many of the `\text...` accents can also be produced using the accent commands shown in Table 8 on page 8 plus an empty argument. For instance, `\={}` is essentially the same as `\textasciimacron`.
- The commands in the “ $\LaTeX 2_{\epsilon}$ ” columns work in both body text and within a `\texttt{...}` command (or, more generally, when `\ttfamily` is in effect).
- Microsoft® Windows® normally uses a superset of Latin 1 called “CP1252” (Code Page 1252). CP1252 adds codes in the range 128–159 (hexadecimal 80–9F), including characters such as dashes, daggers, and quotation marks. If there’s sufficient interest, a future version of the Comprehensive \LaTeX Symbol List may include a CP1252 table.

7.5 About this document

History David Carlisle wrote the first version of this document in October, 1994. It originally contained all of the native \LaTeX symbols (Tables 21, 22, 29, 35, 39, 41, 46, 47, 52, 53 55, and 56) and was designed to be nearly identical to the tables in Chapter 3 of Leslie Lamport’s book [Lam86]. Even the table captions and the order of the symbols within each table matched! The \mathcal{AMS} symbols (Tables 23, 30, 31, 36, 37, 42, 45, 48, and 57) and an initial Math Alphabets table (Table 66) were added thereafter. Later, Alexander Holt provided the `stmaryrd` tables (Tables 24, 25, 32, 33, 38, 49, and 59).

In January, 2001, Scott Pakin took responsibility for maintaining the symbol list and has since implemented a complete overhaul of the document. The result, now called, “The Comprehensive \LaTeX Symbol List”, includes the following new features:

- The addition of a handful of new math alphabets, dozens of new font tables, and thousands of new symbols
- The categorization of the symbol tables into body-text symbols, mathematical symbols, science and technology symbols, dingbats, and other symbols, to provide a more user-friendly document structure
- An index, table of contents, and a frequently-requested symbol list, to help users quickly locate symbols

⁴Donald Knuth didn’t think such symbols were important outside of mathematics, so he omitted them from the OT1 font encoding.

TABLE 126: L^AT_EX 2_ε Latin 1 Table

Dec	Hex	Char	L ^A T _E X 2 _ε	Dec	Hex	Char	L ^A T _E X 2 _ε
161	A1	¡	!'	209	D1	Ñ	\~{N}
162	A2	¢	\textcent (tc)	210	D2	Ò	\' {O}
163	A3	£	\pounds	211	D3	Ó	\' {O}
164	A4	¤	\textcurrency (tc)	212	D4	Ô	\^ {O}
165	A5	¥	\textyen (tc)	213	D5	Õ	\~ {O}
166	A6	¦	\textbrokenbar (tc)	214	D6	Ö	\" {O}
167	A7	§	\S	215	D7	×	\texttimes (tc)
168	A8	¨	\textasciidieresis (tc)	216	D8	Ø	\O
169	A9	©	\textcopyright	217	D9	Ù	\' {U}
170	AA	ª	\textordfeminine	218	DA	Ú	\' {U}
171	AB	«	\guillemotleft (T1)	219	DB	Û	\^ {U}
172	AC	¬	\textlnot (tc)	220	DC	Ü	\" {U}
174	AE	®	\textregistered	221	DD	Ý	\' {Y}
175	AF	ˆ	\textasciimacron (tc)	222	DE	Þ	\TH (T1)
176	B0	°	\textdegree (tc)	223	DF	ß	\ss
177	B1	±	\textpm (tc)	224	E0	à	\' {a}
178	B2	²	\texttwosuperior (tc)	225	E1	á	\' {a}
179	B3	³	\textthreesuperior (tc)	226	E2	â	\^ {a}
180	B4	´	\textasciiacute (tc)	227	E3	ã	\~ {a}
181	B5	µ	\textmu (tc)	228	E4	ä	\" {a}
182	B6	¶	\P	229	E5	å	\aa
183	B7	·	\textperiodcentered	230	E6	æ	\ae
184	B8	¸	\c{}	231	E7	ç	\c{c}
185	B9	¹	\textonesuperior (tc)	232	E8	è	\' {e}
186	BA	º	\textordmasculine	233	E9	é	\' {e}
187	BB	»	\guillemotright	234	EA	ê	\^ {e}
188	BC	¼	\textonequarter (tc)	235	EB	ë	\" {e}
189	BD	½	\textonehalf (tc)	236	EC	ì	\' {i}
190	BE	¾	\textthreequarters (tc)	237	ED	í	\' {i}
191	BF	¿	?'	238	EE	î	\^ {i}
192	C0	À	\' {A}	239	EF	ï	\" {i}
193	C1	Á	\' {A}	240	F0	ð	\dh (T1)
194	C2	Â	\^ {A}	241	F1	ñ	\~ {n}
195	C3	Ã	\~ {A}	242	F2	ò	\' {o}
196	C4	Ä	\" {A}	243	F3	ó	\' {o}
197	C5	Å	\AA	244	F4	ô	\^ {o}
198	C6	Æ	\AE	245	F5	õ	\~ {o}
199	C7	Ç	\c{C}	246	F6	ö	\" {o}
200	C8	È	\' {E}	247	F7	÷	\textdiv (tc)
201	C9	É	\' {E}	248	F8	ø	\o
202	CA	Ê	\^ {E}	249	F9	ù	\' {u}
203	CB	Ë	\" {E}	250	FA	ú	\' {u}
204	CC	Ì	\' {I}	251	FB	û	\^ {u}
205	CD	Í	\' {I}	252	FC	ü	\" {u}
206	CE	Î	\^ {I}	253	FD	ý	\' {y}
207	CF	Ï	\" {I}	254	FE	þ	\th (T1)
208	D0	Ð	\DH (T1)	255	FF	ÿ	\" {y}

- Symbol tables rewritten to list the symbols in alphabetical order
- Appendices to provide additional information relevant to using symbols in \LaTeX
- Tables showing how to typeset all of the characters in the ASCII and Latin 1 font encodings

Furthermore, the internal structure of the document has been completely altered from David's original version. Most of the changes are geared towards making the document easier to extend, modify, and reformat.

Build characteristics Table 127 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/> or one of its many mirror sites) in the directory `tex-archive/info/symbols/comprehensive`.

TABLE 127: Document Characteristics

Characteristic	Value
Source file:	<code>symbols.tex</code>
Build date:	July 2, 2001
Symbols documented:	2266
Packages included:	<code>textcomp latexsym amssymb stmaryrd euscript wasysym pi-font marvosym manfnt bbding ifsym tipa wsuipa ulsy ar tx-fonts fclfont ascii dingbat yfonts accents mathrsfs zapfchan bbold dsfont bbm</code>
Packages omitted:	<i>none</i>

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 $T_{\text{E}}X$ book*, volume A of *Computers and Typesetting*. Addison-Wesley, Reading, MA, USA, 1986.
- [Lam86] Leslie Lamport. *\LaTeX : A document preparation system*. Addison-Wesley, Reading, MA, USA, 1986.
- [LAT00] \LaTeX 3 Project Team. \LaTeX 2 ϵ font selection, January 30, 2000. Available from <http://www.ctan.org/tex-archive/macros/latex/doc/fntguide.ps> (also included in many $T_{\text{E}}X$ distributions).

Index

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

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