

# Technical details on texvcjs

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November 15, 2025

# Chapter 1

## Technical details on texvc identifier extraction

### 1.1 Introduction

This chapter describes which mathematical symbols are identified as identifiers. In general every single Latin letter [a-zA-Z] is regarded as identifier. In addition, we accept multi-letter-subscripts that match [0-9a-zA-Z]+, such as  $a_0$  but also  $\epsilon_{ijk}$ . Moreover, the Literals described in section 1.2, and the Identifier variants (section 1.3) are supported.

### 1.2 Literals

The following literals are supported:

\Bbbk is rendered as  $\mathbb{k}$

\Delta is rendered as  $\Delta$

\Finv is rendered as  $\dashv$

\Game is rendered as  $\triangleright$

\Gamma is rendered as  $\Gamma$

\Lambda is rendered as  $\Lambda$

\Omega is rendered as  $\Omega$

\P is rendered as  $\P$

\Phi is rendered as  $\Phi$   
\Pi is rendered as  $\Pi$   
\Psi is rendered as  $\Psi$   
\S is rendered as  $\S$   
\Sigma is rendered as  $\Sigma$   
\Theta is rendered as  $\Theta$   
\Xi is rendered as  $\Xi$   
\aleph is rendered as  $\aleph$   
\alpha is rendered as  $\alpha$   
\amalg is rendered as  $\amalg$   
\backepsilon is rendered as  $\backepsilon$   
\beta is rendered as  $\beta$   
\beth is rendered as  $\beth$   
\chi is rendered as  $\chi$   
\complement is rendered as  $\complement$   
\daleth is rendered as  $\daleth$   
\delta is rendered as  $\delta$   
\digamma is rendered as  $\digamma$   
\ell is rendered as  $\ell$   
\epsilon is rendered as  $\epsilon$   
\eta is rendered as  $\eta$   
\eth is rendered as  $\eth$   
\flat is rendered as  $\flat$   
\gamma is rendered as  $\gamma$   
\gimel is rendered as  $\gimel$   
\hslash is rendered as  $\hbar$   
\imath is rendered as  $\imath$

\intercal is rendered as  $\top$   
\iota is rendered as  $\iota$   
\jmath is rendered as  $J$   
\kappa is rendered as  $\kappa$   
\lambda is rendered as  $\lambda$   
\mho is rendered as  $\mho$   
\mu is rendered as  $\mu$   
\natural is rendered as  $\natural$   
\nu is rendered as  $\nu$   
\omega is rendered as  $\omega$   
\phi is rendered as  $\phi$   
\pi is rendered as  $\pi$   
\pitchfork is rendered as  $\pitchfork$   
\psi is rendered as  $\psi$   
\rho is rendered as  $\rho$   
\sigma is rendered as  $\sigma$   
\tau is rendered as  $\tau$   
\theta is rendered as  $\theta$   
\top is rendered as  $\top$   
\varepsilon is rendered as  $\varepsilon$   
\varkappa is rendered as  $\varkappa$   
\varnothing is rendered as  $\emptyset$   
\varphi is rendered as  $\varphi$   
\varpi is rendered as  $\varpi$   
\varrho is rendered as  $\varrho$   
\varsigma is rendered as  $\varsigma$   
\vartheta is rendered as  $\vartheta$

`\wp` is rendered as  $\wp$

`\xi` is rendered as  $\xi$

`\zeta` is rendered as  $\zeta$

## 1.3 Identifier variants

The following variants are supported<sup>1</sup>:

`\Bbb` applied on  $x, X$  is rendered as  $\mathbf{x}, \mathbf{X}$

`\acute` applied on  $x, X$  is rendered as  $\acute{x}, \acute{X}$

`\bar` applied on  $x, X$  is rendered as  $\bar{x}, \bar{X}$

`\cancel` applied on  $x, X$  is rendered as  $\cancel{x}, \cancel{X}$

`\bmod` applied on  $x, X$  is rendered as  $\bmod x, \bmod X$

`\bold` applied on  $x, X$  is rendered as  $\mathbf{x}, \mathbf{X}$

`\boldsymbol` applied on  $x, X$  is rendered as  $\boldsymbol{x}, \boldsymbol{X}$

`\breve` applied on  $x, X$  is rendered as  $\breve{x}, \breve{X}$

`\cancel` applied on  $x, X$  is rendered as  $\cancel{x}, \cancel{X}$

`\check` applied on  $x, X$  is rendered as  $\check{x}, \check{X}$

`\ddot` applied on  $x, X$  is rendered as  $\ddot{x}, \ddot{X}$

`\dot` applied on  $x, X$  is rendered as  $\dot{x}, \dot{X}$

`\emph` applied on  $x, X$  is rendered as  $\text{x}, \text{X}$

`\grave` applied on  $x, X$  is rendered as  $\grave{x}, \grave{X}$

`\hat` applied on  $x, X$  is rendered as  $\hat{x}, \hat{X}$

`\mathbb` applied on  $x, X$  is rendered as  $\mathbf{x}, \mathbf{X}$

`\mathbf` applied on  $x, X$  is rendered as  $\mathbf{x}, \mathbf{X}$

`\mathbin` applied on  $x, X$  is rendered as  $\mathbin{x}, \mathbin{X}$

`\mathcal` applied on  $x, X$  is rendered as  $\mathcal{x}, \mathcal{X}$

`\mathclose` applied on  $x, X$  is rendered as  $\mathclose{x}, \mathclose{X}$

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<sup>1</sup>Note that `\mathcal` is not available for lowercase Latin letters.

\mathfrak applied on  $x, X$  is rendered as  $\mathfrak{x}, \mathfrak{X}$   
\mathit applied on  $x, X$  is rendered as  $x, X$   
\mathop applied on  $x, X$  is rendered as  $x, X$   
\mathopen applied on  $x, X$  is rendered as  $x, X$   
\mathord applied on  $x, X$  is rendered as  $x, X$   
\mathpunct applied on  $x, X$  is rendered as  $x, X$   
\mathrel applied on  $x, X$  is rendered as  $x, X$   
\mathrm applied on  $x, X$  is rendered as  $x, X$   
\mathsf applied on  $x, X$  is rendered as  $x, X$   
\mathtt applied on  $x, X$  is rendered as  $x, X$   
\overleftarrow applied on  $x, X$  is rendered as  $\vec{x}, \vec{X}$   
\overleftrightarrow applied on  $x, X$  is rendered as  $\vec{x}, \vec{X}$   
\overline applied on  $x, X$  is rendered as  $\bar{x}, \bar{X}$   
\overrightarrow applied on  $x, X$  is rendered as  $\vec{x}, \vec{X}$   
\textbf applied on  $x, X$  is rendered as  $\mathbf{x}, \mathbf{X}$   
\textit applied on  $x, X$  is rendered as  $x, X$   
\textrm applied on  $x, X$  is rendered as  $x, X$   
\textsf applied on  $x, X$  is rendered as  $x, X$   
\texttt applied on  $x, X$  is rendered as  $x, X$   
\tilde applied on  $x, X$  is rendered as  $\tilde{x}, \tilde{X}$   
\underline applied on  $x, X$  is rendered as  $\underline{x}, \underline{X}$   
\vec applied on  $x, X$  is rendered as  $\vec{x}, \vec{X}$   
\widehat applied on  $x, X$  is rendered as  $\hat{x}, \hat{X}$   
\widetilde applied on  $x, X$  is rendered as  $\tilde{x}, \tilde{X}$   
\xcancel applied on  $x, X$  is rendered as  $\cancel{x}, \cancel{X}$   
\xleftarrow applied on  $x, X$  is rendered as  $\overset{x}{\overbrace{\phantom{...}}}, \overset{X}{\overbrace{\phantom{...}}}$

`\xrightarrow` applied on  $x, X$  is rendered as  $\xrightarrow{x}$ ,  $\xrightarrow{X}$

# Chapter 2

## List of all commands supported

Chapter 2 lists all commands allowed by texvcjs.

### 2.1 Group big\_literals

\Big is rendered as (

\Bigg is rendered as (

\Biggl is rendered as (

\Biggr is rendered as (

\Bigl is rendered as (

\Bigr is rendered as (

\big is rendered as (

\bigg is rendered as (

\biggl is rendered as (

\biggr is rendered as  $($

\bigl is rendered as  $($

\bigr is rendered as  $($

## 2.2 Group box\_functions

\hbox is rendered as x

\mbox is rendered as x

\text is rendered as x

\vbox is rendered as x

## 2.3 Group color\_function

\color is rendered as *red*

\pagecolor is not rendered.

## 2.4 Group decl\_h\_function

\bf is rendered as

\cal is rendered as

\it is rendered as

\rm is rendered as

## 2.5 Group definecolor\_function

\definecolor is rendered as

## 2.6 Group fun\_ar1

\acute is rendered as  $\acute{x}$

\bar is rendered as  $\bar{x}$

\bcancel is rendered as  $\cancel{x}$   
\bmod is rendered as  $\bmod x$   
\boldsymbol is rendered as  $\boldsymbol{x}$   
\breve is rendered as  $\breve{x}$   
\cancel is rendered as  $\cancel{x}$   
\check is rendered as  $\check{x}$   
\ddot is rendered as  $\ddot{x}$   
\dot is rendered as  $\dot{x}$   
\emph is rendered as  $x$   
\grave is rendered as  $\grave{x}$   
\hat is rendered as  $\hat{x}$   
\hphantom is rendered as  
\mathcal is rendered as  
\mathclose is rendered as  $x$   
\mathfrak is rendered as  $\mathfrak{x}$   
\mathit is rendered as  $x$   
\mathopen is rendered as  $x$   
\mathord is rendered as  $x$   
\mathpunct is rendered as  $x$   
\mathsf is rendered as  $x$   
\mathtt is rendered as  $x$   
\overleftarrow is rendered as  $\overleftarrow{x}$   
\overleftrightarrow is rendered as  $\overleftrightarrow{x}$   
\overline is rendered as  $\overline{x}$   
\overrightarrow is rendered as  $\overrightarrow{x}$   
\phantom is rendered as  
\pmod is rendered as  $(\bmod x)$

\sqrt is rendered as  $\sqrt{x}$   
\textbf is rendered as **x**  
\textit is rendered as *x*  
\textrm is rendered as  $x$   
\textsf is rendered as  $x$   
\texttt is rendered as  $x$   
\tilde is rendered as  $\tilde{x}$   
\underline is rendered as x  
\vec is rendered as  $\vec{x}$   
\vphantom is rendered as  
\widehat is rendered as  $\widehat{x}$   
\widetilde is rendered as  $\widetilde{x}$   
\xcancel is rendered as  $\cancel{x}$

## 2.7 Group fun\_ar1nb

\mathbb is rendered as  $\mathbb{x}$   
\mathbf is rendered as **x**  
\mathbin is rendered as  $x$   
\mathop is rendered as  $x$   
\mathrel is rendered as  $x$   
\mathrm is rendered as  $x$   
\operatorname is rendered as  $x$   
\overarc is rendered as  $6.0pt\widehat{x}$   
\overbrace is rendered as  $\overbrace{x}^x$   
\underbrace is rendered as  $\underbrace{x}_m$   
\xleftarrow is rendered as  $\xleftarrow{x}_m$

\xrightarrow is rendered as  $\xrightarrow{M}$

## 2.8 Group fun\_ar1opt

\sqrt is rendered as  $\sqrt{x}$

\xleftarrow is rendered as  $\xleftarrow{x}$

\xrightarrow is rendered as  $\xrightarrow{M}$

## 2.9 Group fun\_ar2

\binom applied on  $xx$  is rendered as  $\binom{x}{x}$

\cancelto applied on  $xx$  is rendered as  $x \cancelto{x}$

\cfrac applied on  $xx$  is rendered as  $\cfrac{x}{x}$

\dbinom applied on  $xx$  is rendered as  $\dbinom{x}{x}$

\dfrac applied on  $xx$  is rendered as  $\dfrac{x}{x}$

\frac applied on  $xx$  is rendered as  $\frac{x}{x}$

\overset applied on  $xx$  is rendered as  $\overset{x}{x}$

\stackrel applied on  $xx$  is rendered as  $\stackrel{x}{x}$

\tbinom applied on  $xx$  is rendered as  $\tbinom{x}{x}$

\tfrac applied on  $xx$  is rendered as  $\tfrac{x}{x}$

\underset applied on  $xx$  is rendered as  $\underset{x}{x}$

## 2.10 Group fun\_ar2nb

\sideset applied on  $\sum_{13}^{24}$  is rendered as  $\sum_1^2 \sum_3^4$

## **2.11 Group fun\_infix**

\atop applied on  $x, y$  is rendered as  $\frac{x}{y}$

\choose applied on  $x, y$  is rendered as  $\binom{x}{y}$

\over applied on  $x, y$  is rendered as  $\frac{x}{y}$

## **2.12 Group fun\_mhchem**

\ce is rendered as x

## **2.13 Group hline\_function**

\hline applied in a table is rendered as  $x_{11} \quad x_{12}$

## **2.14 Group latex\_function\_names**

\Pr is rendered as Pr

\arccos is rendered as arccos

\arcsin is rendered as arcsin

\arctan is rendered as arctan

\arg is rendered as arg

\cos is rendered as cos

\cosh is rendered as cosh

\cot is rendered as cot

\coth is rendered as coth

\csc is rendered as csc

\deg is rendered as deg

\det is rendered as det

\dim is rendered as dim

\exp is rendered as exp

\gcd is rendered as gcd  
\hom is rendered as hom  
\inf is rendered as inf  
\ker is rendered as ker  
\lg is rendered as lg  
\lim is rendered as lim  
\liminf is rendered as lim inf  
\limsup is rendered as lim sup  
\ln is rendered as ln  
\log is rendered as log  
\max is rendered as max  
\min is rendered as min  
\sec is rendered as sec  
\sin is rendered as sin  
\sinh is rendered as sinh  
\sup is rendered as sup  
\tan is rendered as tan  
\tanh is rendered as tanh

## 2.15 Group left\_function

\left is rendered as (

## 2.16 Group mediawi\_ki\_function\_names

\arccot is rendered as arccot  $y$   
\arccsc is rendered as arccsc  $y$   
\arcsec is rendered as arcsec  $y$   
\sen is rendered as sen  $y$

\sgn is rendered as  $\operatorname{sgn} y$

## 2.17 Group mhchem\_bond

\bond is rendered as  $-$

## 2.18 Group mhchem\_macro\_1p

\ce is rendered as  $x$

\mathbf is rendered as  $\mathbf{x}$

## 2.19 Group mhchem\_macro\_2p

\frac applied on  $xx$  is rendered as  $\frac{x}{x}$

\overset applied on  $xx$  is rendered as  $\overset{x}{x}$

\underset applied on  $xx$  is rendered as  $\underset{x}{x}$

## 2.20 Group mhchem\_macro\_2pc

\color is rendered as red

## 2.21 Group mhchem\_macro\_2pu

\underbrace is rendered as  $\underbrace{x}$

## 2.22 Group mhchem\_single\_macro

\Alpha is rendered as A

\Beta is rendered as B

\Chi is rendered as X

\Delta is rendered as  $\Delta$

\Epsilon is rendered as E

\Eta is rendered as H  
\Gammama is rendered as  $\Gamma$   
\Iota is rendered as I  
\Kappa is rendered as K  
\Lambda is rendered as  $\Lambda$   
\Mu is rendered as M  
\Nu is rendered as N  
\Omega is rendered as  $\Omega$   
\Omicron is rendered as  
\Phi is rendered as  $\Phi$   
\Pi is rendered as  $\Pi$   
\Psi is rendered as  $\Psi$   
\Rho is rendered as P  
\Sigma is rendered as  $\Sigma$   
\Tau is rendered as T  
\Theta is rendered as  $\Theta$   
\Upsilon is rendered as  $\Upsilon$   
\Zeta is rendered as Z  
\alpha is rendered as  $\alpha$   
\approx is rendered as  $\approx$   
\beta is rendered as  $\beta$   
\ca was never used.  
<https://phabricator.wikimedia.org/T323878>  
\chi is rendered as  $\chi$   
\circ is rendered as  $\circ$   
\delta is rendered as  $\delta$   
\epsilon is rendered as  $\epsilon$   
\eta is rendered as  $\eta$

\gamma is rendered as  $\gamma$   
\iota is rendered as  $\iota$   
\kappa is rendered as  $\kappa$   
\lambda is rendered as  $\lambda$   
\mu is rendered as  $\mu$   
\nu is rendered as  $\nu$   
\omega is rendered as  $\omega$   
\omicron is rendered as  
\phi is rendered as  $\varphi$   
\pi is rendered as  $\pi$   
\pm is rendered as  $\pm$   
\psi is rendered as  $\psi$   
\rho is rendered as  $\rho$   
\sigma is rendered as  $\sigma$   
\tau is rendered as  $\tau$   
\theta is rendered as  $\vartheta$   
\upsilon is rendered as  $\upsilon$   
\varepsilon is rendered as  $\varepsilon$   
\varkappa is rendered as  $\varkappa$   
\varphi is rendered as  $\varphi$   
\varpi is rendered as  $\varpi$   
\varrho is rendered as  $\varrho$   
\varsigma is rendered as  $\varsigma$   
\vartheta is rendered as  $\vartheta$   
\zeta is rendered as  $\zeta$

## 2.23 Group nullary\_macro

\And is rendered as  $\varsigma$   
\Bbbk is rendered as  $\mathbb{k}$   
\Box is rendered as  $\square$   
\Bumpeq is rendered as  $\approx$   
\Cap is rendered as  $\cap$   
\Cup is rendered as  $\cup$   
\Delta is rendered as  $\Delta$   
\Diamond is rendered as  $\diamond$   
\Finv is rendered as  $\dashv$   
\Game is rendered as  $\triangleright$   
\Gamma is rendered as  $\Gamma$   
\Im is rendered as  $\Im$   
\Lambda is rendered as  $\Lambda$   
\Leftarrow is rendered as  $\leftarrow$   
\Leftrightarrow is rendered as  $\leftrightarrow$   
\Leftarrowtail is rendered as  $\lhd$   
\Longleftarrow is rendered as  $\Leftarrow$   
\Longleftrightarrow is rendered as  $\Leftrightarrow$   
\Longrightarrow is rendered as  $\Rightarrow$   
\Lsh is rendered as  $\cdot$   
\Omega is rendered as  $\Omega$   
\P is rendered as  $\P$   
\Phi is rendered as  $\Phi$   
\Pi is rendered as  $\Pi$   
\Psi is rendered as  $\Psi$   
\Re is rendered as  $\Re$

\Rightarrow is rendered as  $\rightarrow$   
\Rrightarrow is rendered as  $\Rightarrow$   
\Rsh is rendered as  $\succ$   
\S is rendered as  $\$$   
\Sigma is rendered as  $\Sigma$   
\Subset is rendered as  $\subseteq$   
\Supset is rendered as  $\supseteq$   
\Theta is rendered as  $\Theta$   
\Upsilon is rendered as  $\Upsilon$   
\Vdash is rendered as  $\Vdash$   
\Vvdash is rendered as  $\Vvdash$   
\Xi is rendered as  $\Xi$   
\aleph is rendered as  $\aleph$   
\alpha is rendered as  $\alpha$   
\amalg is rendered as  $\amalg$   
\angle is rendered as  $\angle$   
\approx is rendered as  $\approx$   
\approxeq is rendered as  $\approx$   
\ast is rendered as  $*$   
\asymp is rendered as  $\asymp$   
\backepsilon is rendered as  $\backepsilon$   
\backprime is rendered as  $\backprime$   
\backsim is rendered as  $\backsim$   
\backsimeq is rendered as  $\backsimeq$   
\barwedge is rendered as  $\barwedge$   
\because is rendered as  $\because$   
\beta is rendered as  $\beta$

\beth is rendered as  $\beth$   
\between is rendered as  $\between$   
\bigcap is rendered as  $\bigcap$   
\bigcirc is rendered as  $\bigcirc$   
\bigcup is rendered as  $\bigcup$   
\bigodot is rendered as  $\bigodot$   
\bigoplus is rendered as  $\bigoplus$   
\bigotimes is rendered as  $\bigotimes$   
\bigsqcup is rendered as  $\bigsqcup$   
\bigstar is rendered as  $\bigstar$   
\bigtriangledown is rendered as  $\bigtriangledown$   
\bigtriangleup is rendered as  $\bigtriangleup$   
\biguplus is rendered as  $\biguplus$   
\bigvee is rendered as  $\bigvee$   
\bigwedge is rendered as  $\bigwedge$   
\blacklozenge is rendered as  $\blacklozenge$   
\blacksquare is rendered as  $\blacksquare$   
\blacktriangle is rendered as  $\blacktriangle$   
\blacktriangledown is rendered as  $\blacktriangledown$   
\blacktriangleleft is rendered as  $\blacktriangleleft$   
\blacktriangleright is rendered as  $\blacktriangleright$   
\bot is rendered as  $\bot$   
\bowtie is rendered as  $\bowtie$   
\boxdot is rendered as  $\boxdot$   
\boxminus is rendered as  $\boxminus$   
\boxplus is rendered as  $\boxplus$   
\boxtimes is rendered as  $\boxtimes$

\bullet is rendered as •  
\bumpeq is rendered as ≈  
\cap is rendered as ∩  
\cdot is rendered as ⋅  
\cdots is rendered as ...  
\centerdot is rendered as ⋅  
\checkmark is rendered as ✓  
\chi is rendered as χ  
\circ is rendered as °  
\circeq is rendered as ≈  
\circlearrowleft is rendered as ←  
\circlearrowright is rendered as →  
\circledS is rendered as ®  
\circledast is rendered as ®  
\circledcirc is rendered as ®  
\circleddash is rendered as ℐ  
\clubsuit is rendered as ♣  
\colon is rendered as :  
\complement is rendered as ℂ  
\cong is rendered as ≈  
\coprod is rendered as ⋃  
\cup is rendered as ∪  
\curlyeqprec is rendered as ⪻  
\curlyeqsucc is rendered as ⪼  
\curlyvee is rendered as √  
\curlywedge is rendered as ∧  
\curvearrowleft is rendered as ↙

\curvearrowright is rendered as  $\curvearrowright$   
\dagger is rendered as  $\dagger$   
\daleth is rendered as  $\daleth$   
\dashv is rendered as  $\dashv$   
\ddagger is rendered as  $\ddagger$   
\ddots is rendered as  $\ddots$   
\delta is rendered as  $\delta$   
\diagdown is rendered as  $\diagdown$   
\diagup is rendered as  $\diagup$   
\diamond is rendered as  $\diamond$   
\diamondsuit is rendered as  $\diamondsuit$   
\digamma is rendered as  $\digamma$   
\displaystyle is rendered as  
\div is rendered as  $\div$   
\divideontimes is rendered as  $\divideontimes$   
\doteq is rendered as  $\doteq$   
\doteqdot is rendered as  $\doteqdot$   
\dotplus is rendered as  $\dotplus$   
\dots is rendered as ...  
\dotsb is rendered as ...  
\dotsc is rendered as ...  
\dotsi is rendered as ...  
\dotsm is rendered as ...  
\dotso is rendered as ...  
\doublebarwedge is rendered as  $\doublebarwedge$   
\downdownarrows is rendered as  $\downdownarrows$   
\downharpoonleft is rendered as  $\downharpoonleft$

\downharpoonright is rendered as  $\rightarrowtail$   
\ell is rendered as  $\ell$   
\emptyset is rendered as  $\emptyset$   
\epsilon is rendered as  $\epsilon$   
\eqcirc is rendered as  $\bowtie$   
\eqsim is rendered as  $\approx$   
\eqslantgtr is rendered as  $\succcurlyeq$   
\eqslantless is rendered as  $\preccurlyeq$   
\equiv is rendered as  $\equiv$   
\eta is rendered as  $\eta$   
\eth is rendered as  $\eth$   
\exists is rendered as  $\exists$   
\fallingdotseq is rendered as  $\doteq$   
\flat is rendered as  $\flat$   
\forall is rendered as  $\forall$   
\frown is rendered as  $\frown$   
\gamma is rendered as  $\gamma$   
\geq is rendered as  $\geq$   
\geqq is rendered as  $\geqslant$   
\geqslant is rendered as  $\succcurlyeq$   
\gets is rendered as  $\leftarrow$   
\gg is rendered as  $\gg$   
\ggg is rendered as  $\ggg$   
\gimel is rendered as  $\gimel$   
\gnapprox is rendered as  $\gtrapprox$   
\gneq is rendered as  $\gneq$   
\gneqq is rendered as  $\gneqq$

\gnsim is rendered as  $\gtrsim$   
\gtrapprox is rendered as  $\gtrapprox$   
\gtrdot is rendered as  $\gtreqless$   
\gtreqless is rendered as  $\gtreqless$   
\gtreqqless is rendered as  $\gtreqqless$   
\gtrless is rendered as  $\gtrless$   
\gtrsim is rendered as  $\gtrsim$   
\gvertneqq is rendered as  $\gvertneqq$   
\hbar is rendered as  $\hbar$   
\heartsuit is rendered as  $\heartsuit$   
\hookleftarrow is rendered as  $\circlearrowleft$   
\hookrightarrow is rendered as  $\circlearrowright$   
\hslash is rendered as  $\hslash$   
\iff is rendered as  $\iff$   
\iiint is rendered as  $\iiint$   
\iiint is rendered as  $\iiint$   
\iint is rendered as  $\iint$   
\imath is rendered as  $\imath$   
\implies is rendered as  $\implies$   
\in is rendered as  $\in$   
\infty is rendered as  $\infty$   
\injlim is rendered as  $\operatorname{inj lim}$   
\int is rendered as  $\int$   
\intBar is rendered as  $\int\!\!\!\neq$   
\intbar is rendered as  $\int\!\!\!f$   
\intercal is rendered as  $\intercal$   
\iota is rendered as  $\iota$

$\jmath$ math is rendered as  $J$   
 $\kappa$  is rendered as  $\kappa$   
 $\lVert$  is rendered as  $\parallel$   
 $\lambda$  is rendered as  $\lambda$   
 $\wedge$  is rendered as  $\wedge$   
 $\ldots$  is rendered as  $\dots$   
 $\leftarrow$  is rendered as  $\}$   
 $\leftarrowtail$  is rendered as  $\circledcirc$   
 $\leftharpoondown$  is rendered as  $\bar{A}$   
 $\leftharpoonup$  is rendered as  $\tilde{A}$   
 $\leftleftarrows$  is rendered as  $\hat{\top}$   
 $\rightarrowtail$  is rendered as  $>$   
 $\rightarrowleftarrows$  is rendered as  $\hat{\mid}$   
 $\rightharpoons$  is rendered as  $\circlearrowright$   
 $\rightsquigarrow$  is rendered as  $\curvearrowright$   
 $\leftthreetimes$  is rendered as  $\times$   
 $\leq$  is rendered as  $\leq$   
 $\leqq$  is rendered as  $\leqq$   
 $\leqslant$  is rendered as  $\leqslant$   
 $\lessapprox$  is rendered as  $\lessapprox$   
 $\lessdot$  is rendered as  $\lessdot$   
 $\lesseqgtr$  is rendered as  $\lessgtr$   
 $\lesseqqgtr$  is rendered as  $\lessgtr$   
 $\lessgtr$  is rendered as  $\lessgtr$   
 $\lessim$  is rendered as  $\lessapprox$   
 $\lim_{a}^b$  is rendered for example as  $\cap_a^b$   
 $\ll$  is rendered as  $\ll$

\lll is rendered as  $\lll$   
\lnapprox is rendered as  $\not\approx$   
\lneq is rendered as  $\not\leq$   
\lneqq is rendered as  $\not\leqslant$   
\lnot is rendered as  $\neg$   
\lnsim is rendered as  $\not\sim$   
\longleftarrow is rendered as  $\longleftarrow$   
\longleftrightarrow is rendered as  $\longleftrightarrow$   
\longmapsto is rendered as  $\longmapsto$   
\longrightarrow is rendered as  $\longrightarrow$   
\looparrowleft is rendered as  $\circlearrowleft$ <sup>2</sup>  
\looparrowright is rendered as  $\circlearrowright$ <sup>3</sup>  
\lor is rendered as  $\vee$   
\lozenge is rendered as  $\lozenge$   
\ltimes is rendered as  $\ltimes$   
\lvertneqq is rendered as  $\not\leqslant$   
\mapsto is rendered as  $\rightarrow$   
\measuredangle is rendered as  $\measuredangle$   
\mho is rendered as  $\mho$   
\mid is rendered as  $|$   
\mod is rendered as  $\mod$   
\models is rendered as  $\models$   
\mp is rendered as  $\mp$   
\mu is rendered as  $\mu$   
\multimap is rendered as  $\multimap$   
\nLeftarrow is rendered as  $\nLeftarrow$   
\nLeftrightarrow is rendered as  $\nLeftrightarrow$

\nRightarrow is rendered as  $\circlearrowright$   
\nVDash is rendered as  $\nparallel$   
\nVdash is rendered as  $\nparallel$   
\nnabla is rendered as  $\nabla$   
\nnatural is rendered as  $\natural$   
\ncong is rendered as  $\cong$   
\nearrow is rendered as  $\nearrow$   
\neg is rendered as  $\neg$   
\neq is rendered as  $\neq$   
\nexists is rendered as  $\nexists$   
\ngeq is rendered as  $\ngeq$   
\ngeqq is rendered as  $\ngeqq$   
\ngeqslant is rendered as  $\ngeqslant$   
\ngtr is rendered as  $\ngtr$   
\ni is rendered as  $\ni$   
\nleftarrow is rendered as  $\lvert$   
\nleftrightarrow is rendered as  $\lvert\lvert$   
\nleq is rendered as  $\nleq$   
\nleqq is rendered as  $\nleqq$   
\nleqslant is rendered as  $\nleqslant$   
\nless is rendered as  $\nless$   
\nmid is rendered as  $\mid$   
\nolimits is rendered for example as  $\cap_a^b$   
\not is rendered as  $\not$   
\notin is rendered as  $\notin$   
\nparallel is rendered as  $\nparallel$   
\nprec is rendered as  $\nprec$

\npreceq is rendered as  $\preccurlyeq$   
\nrightarrow is rendered as  $\rightarrowtail$   
\nshortmid is rendered as  $\shortmid$   
\nshortparallel is rendered as  $\shortparallel$   
\nsim is rendered as  $\sim$   
\nsubseteqq is rendered as  $\subsetneqq$   
\nsubseteqqq is rendered as  $\subsetneq\!\subsetneq$   
\nsucc is rendered as  $\succ$   
\nsucceq is rendered as  $\succcurlyeq$   
\nsupseteq is rendered as  $\supseteq$   
\nsupseteqq is rendered as  $\supseteq\!\supseteq$   
\ntriangleleft is rendered as  $\triangleleft$   
\ntrianglelefteq is rendered as  $\trianglelefteq$   
\ntriangleright is rendered as  $\triangleleft$   
\ntrianglerighteq is rendered as  $\triangleleft\!\triangleleft$   
\nu is rendered as  $\nu$   
\nvDash is rendered as  $\nvDash$   
\nvdash is rendered as  $\nvdash$   
\nwarrow is rendered as  $\bullet$   
\nodot is rendered as  $\odot$   
\oiint is rendered as  $\iint$   
\oint is rendered as  $\oint$   
\ointclockwise is rendered as  $\oint$   
\omega is rendered as  $\omega$   
\ominus is rendered as  $\ominus$   
\oplus is rendered as  $\oplus$

\oslash is rendered as  $\oslash$   
\otimes is rendered as  $\otimes$   
\parallel is rendered as  $\parallel$   
\partial is rendered as  $\partial$   
\perp is rendered as  $\perp$   
\phi is rendered as  $\phi$   
\pi is rendered as  $\pi$   
\pitchfork is rendered as  $\pitchfork$   
\pm is rendered as  $\pm$   
\prec is rendered as  $\prec$   
\precapprox is rendered as  $\precsim$   
\preccurlyeq is rendered as  $\preccurlyeq$   
\preceq is rendered as  $\leq$   
\precnapprox is rendered as  $\not\precsim$   
\precneqq is rendered as  $\not\precsim$   
\precnsim is rendered as  $\not\sim$   
\precsim is rendered as  $\precsim$   
\prime is rendered as  $'$   
\prod is rendered as  $\prod$   
\projlim is rendered as  $\text{proj lim}$   
\propto is rendered as  $\propto$   
\psi is rendered as  $\psi$   
\quad is rendered as  
\quad is rendered as  
\rVert is rendered as  $\parallel$   
\rho is rendered as  $\rho$   
\rightarrow is rendered as  ${}^{\text{TM}}$

\rightarrowtail is rendered as  $\rightarrowtail$   
\rightharpoondown is rendered as  $\rightarrowtail$   
\rightharpoonup is rendered as  $\rightarrowtail$   
\rightleftarrows is rendered as  $\rightleftarrows$   
\rightrightarrows is rendered as  $\rightrightarrows$   
\rightsquigarrow is rendered as  $\rightsquigarrow$   
\rightthreetimes is rendered as  $\rightthreetimes$   
\risingdotseq is rendered as  $\rightthreetimes$   
\rtimes is rendered as  $\rtimes$   
\scriptscriptstyle is rendered as  $\scriptscriptstyle$   
\scriptstyle is rendered as  $\scriptstyle$   
\searrow is rendered as  $\searrow$   
\setminus is rendered as  $\setminus$   
\sharp is rendered as  $\sharp$   
\shortmid is rendered as  $\shortmid$   
\shortparallel is rendered as  $\shortparallel$   
\sigma is rendered as  $\sigma$   
\sim is rendered as  $\sim$   
\simeq is rendered as  $\simeq$   
\smallfrown is rendered as  $\smallfrown$   
\smallsetminus is rendered as  $\smallsetminus$   
\smallsmile is rendered as  $\smallsmile$   
\smile is rendered as  $\smile$   
\spadesuit is rendered as  $\spadesuit$   
\sphericalangle is rendered as  $\sphericalangle$   
\sqcap is rendered as  $\sqcap$   
\sqcup is rendered as  $\sqcup$

\sqsubset is rendered as  $\sqsubset$   
\sqsubseteq is rendered as  $\sqsubseteq$   
\sqsupset is rendered as  $\sqsupset$   
\sqsupseteq is rendered as  $\sqsupseteq$   
\square is rendered as  $\square$   
\star is rendered as  $\star$   
\subset is rendered as  $\subset$   
\subseteq is rendered as  $\subseteq$   
\subsetneq is rendered as  $\subsetneq$   
\subsetneqq is rendered as  $\subsetneqq$   
\succ is rendered as  $\succ$   
\succapprox is rendered as  $\succapprox$   
\succcurlyeq is rendered as  $\succcurlyeq$   
\succeq is rendered as  $\succeq$   
\succnapprox is rendered as  $\succnapprox$   
\succneqq is rendered as  $\succneqq$   
\succnsim is rendered as  $\succnsim$   
\succsim is rendered as  $\succsim$   
\sum is rendered as  $\sum$   
\supset is rendered as  $\supset$   
\supseteq is rendered as  $\supseteq$   
\supseteqq is rendered as  $\supseteqq$   
\supsetneq is rendered as  $\supsetneq$   
\supsetneqq is rendered as  $\supsetneqq$   
\surd is rendered as  $\sqrt{\phantom{x}}$   
\swarrow is rendered as  $\swarrow$

\tau is rendered as  $\tau$   
\textstyle is rendered as  
\therefore is rendered as  $\therefore$   
\theta is rendered as  $\theta$   
\thickapprox is rendered as  $\approx$   
\thicksim is rendered as  $\sim$   
\times is rendered as  $\times$   
\text{to} is rendered as  $^{\text{TM}}$   
\top is rendered as  $\top$   
\triangle is rendered as  $\triangle$   
\triangledown is rendered as  $\triangledown$   
\triangleleft is rendered as  $\triangleleft$   
\trianglelefteq is rendered as  $\trianglelefteq$   
\triangleq is rendered as  $\triangleq$   
\triangleright is rendered as  $\triangleright$   
\trianglerighteq is rendered as  $\trianglerighteq$   
\upharpoonleft is rendered as  $\upharpoonleft$   
\upharpoonright is rendered as  $\upharpoonright$   
\uplus is rendered as  $\uplus$   
\upsilon is rendered as  $\upsilon$   
\upuparrows is rendered as  $\upuparrows$   
\vDash is rendered as  $\vDash$   
\varDelta is rendered as  $\varDelta$   
\varGamma is rendered as  $\varGamma$   
\varLambda is rendered as  $\varLambda$   
\varOmega is rendered as  $\varOmega$   
\varPhi is rendered as  $\varPhi$

\varPi is rendered as  $\Pi$   
\varSigma is rendered as  $\Sigma$   
\varTheta is rendered as  $\Theta$   
\varUpsilon is rendered as  $\Upsilon$   
\varXi is rendered as  $\Xi$   
\varepsilon is rendered as  $\epsilon$   
\varinjlim is rendered as  $\lim_{\text{inj}}$   
\varkappa is rendered as  $\kappa$   
\varliminf is rendered as  $\varliminf$   
\varlimsup is rendered as  $\varlimsup$   
\varnothing is rendered as  $\emptyset$   
\varointclockwise is rendered as  $\oint$   
\varphi is rendered as  $\varphi$   
\varpi is rendered as  $\varpi$   
\varprojlim is rendered as  $\varprojlim$   
\varpropto is rendered as  $\propto$   
\varrho is rendered as  $\varrho$   
\varsigma is rendered as  $\varsigma$   
\varsubsetneq is rendered as  $\subsetneq$   
\varsubsetneqq is rendered as  $\subsetneqq$   
\varsupsetneq is rendered as  $\supsetneq$   
\varsupsetneqq is rendered as  $\supsetneqq$   
\vartheta is rendered as  $\vartheta$   
\vartriangle is rendered as  $\triangle$   
\vartriangleleft is rendered as  $\triangleleft$   
\vartriangleright is rendered as  $\triangleleft$   
\vdash is rendered as  $\vdash$

\vdots is rendered as :  
\vee is rendered as  $\vee$   
\veebar is rendered as  $\veebar$   
\vline is rendered as |  
\wedge is rendered as  $\wedge$   
\wp is rendered as  $\wp$   
\wr is rendered as  $\wr$   
\xi is rendered as  $\xi$   
\zeta is rendered as  $\zeta$

## 2.24 Group nullary\_macro\_in mbox

\AA is rendered as  $\AA$   
\Coppa is rendered as  $\lambda$   
\Digamma is rendered as  $\beth$   
\Koppa is rendered as  $\lambda$   
\Sampi is rendered as  $\nu$   
\Stigma is rendered as  $\mu$   
\coppa is rendered as  $\imath$   
\euro is rendered as  $\euro$   
\geneuro is rendered as  $\mathbb{E}$   
\geneuronarrow is rendered as  $\mathbb{E}$   
\geneurowide is rendered as  $\mathbb{E}$   
\koppa is rendered as  $\theta$   
\officialeuro is rendered as  $\mathbb{e}$   
\sampi is rendered as  $\sigma$   
\stigma is rendered as  $\Sigma$   
\textvisiblespace is rendered as

`\varstigma` is rendered as  $\Upsilon$

## 2.25 Group other delimiters1

`\Downarrow` is rendered as  $\Downarrow$

`\Updownarrow` is rendered as  $\Updownarrow$

`\Updownarrow` is rendered as  $\Updownarrow$

`\Vert` is rendered as  $\parallel$

`\backslash` is rendered as  $\backslash$

`\downarrow` is rendered as  $\downarrow$

`\langle` is rendered as  $\langle$

`\{` is rendered as  $\{$

`\[` is rendered as  $\lceil$

`\lceil` is rendered as  $\lceil$

`\lfloor` is rendered as  $\lfloor$

`\llcorner` is rendered as  $\llcorner$

`\lrcorner` is rendered as  $\lrcorner$

`\rangle` is rendered as  $\rangle$

`\}` is rendered as  $\}$

`\rceil` is rendered as  $\rceil$

`\rfloor` is rendered as  $\rfloor$

`\rightleftharpoons` is rendered as  $\rightleftharpoons$

`\twoheadleftarrow` is rendered as  $\twoheadleftarrow$

`\twoheadrightarrow` is rendered as  $\twoheadrightarrow$

`\ulcorner` is rendered as  $\ulcorner$

`\uparrow` is rendered as  $\sim$

`\updownarrow` is rendered as  $\updownarrow$

`\urcorner` is rendered as  $\nwarrow$

`\vert` is rendered as  $|$

## 2.26 Group other\_delimiters2

`\Darr` is rendered as  $\Downarrow$

`\Uarr` is rendered as  $\emptyset$

`\dArr` is rendered as  $\Downarrow$

`\darr` is rendered as  $\Downarrow$

`\lang` is rendered as  $\langle$

`\rang` is rendered as  $\rangle$

`\uArr` is rendered as  $\emptyset$

`\uarr` is rendered as  $\sim$

## 2.27 Group right\_function

`\right` is rendered as  $)$