

# The LibertinusT<sub>1</sub> Math Package

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This package is a L<sup>A</sup>T<sub>E</sub>X math package to accompany the L<sup>A</sup>T<sub>E</sub>X Libertine text package, serving as an alternative to newtxmath with the `libertine` option. Both packages use the Greek and Roman letters from Libertine, but LibertinusT<sub>1</sub>Math symbols are mostly taken from the LibertinusMath font which extends and corrects Libertine, while newtxmath uses symbols matching Times in weight and size, and so are a bit heavier and larger. I've changed a number of glyphs from LibertinusMath and added dozens of new glyphs. Like LibertinusMath, LibertinusT<sub>1</sub>Math does not contain calligraphic, script or gothic alphabets. The package sets `\mathcal` to the (unscaled) STIX calligraphic font and `\mathbb` to the LibertinusT<sub>1</sub>Math double-struck alphabet. The `mathalfa` package (loaded AFTER `libertinust1math`) offers a convenient way to change these default choices and to set the script and gothic alphabets. See the sample invocation below, which assumes you have `mathalfa` version 1.08 (March 2016) or higher.

**NEW ADDITIONS IN VERSION 1.1:** There is now support for sans serif fonts in math that allows the ISO typesetting rules to be followed, and to provide a math processing system using sans serif Roman and Greek letters. See the end of this documentation for details.

**NEW ADDITIONS IN VERSION 1.1.8:** There is now support for the scaling options in both the old `libertine` and the new `libertinus[-type1]` packages. Prior versions supported only earlier `libertine` package[s]. The details are spelled out below in the discussion of the `scaled` package option.

## PACKAGE OPTIONS:

- `lcgreekalpha` makes lower-case Greek letters be of type `mathalpha` rather than `mathord`, forcing them to respond to alphabet changing commands such as `\mathnormal`, `\mathrm`, `\mathit` and `\mathsf`.
- `upint` changes the style of integrals from the default *slanted* to *upright*.
- `frenchmath` changes the math style to use upright Greek and Roman capital letters rather than math italic shapes.
- `slantedGreek` makes uppercase Greek math letters slanted.
- `uprightGreek` makes uppercase Greek math letters upright. This is the default except in ISO mode.
- `scaled` (or `scale` may be used change the scale of the math. The fd files in this package respond to three scale-changing macros:
  - `\LinuxLibertineT@scale`, set from option `llscale` ( or `llscaled`) to the `libertine` package;
  - `\LibertinusRM@scale`, set by option `ScaleRM` to the `libertinus-type1` package or to the `libertinus` package;
  - `\ibus@scale`, set by the `scaled` option to `libertinust1math`.

The current `libertineRoman` package contains no option that affects the scale parameter. If you need to scale `libertineRoman`, add to your preamble lines like

```
\makeatletter  
\newcommand*{\LinuxLibertineT@scale}{1.03}  
\makeatother
```

If `\libus@scale` is defined, it takes precedence over the other two settings. The result on math scaling only of the different possible scale settings is:

- the `scaled` option to `libertinust1math` overrides all other scale settings;
- if you did not issue a `scale` or `scaled` option to `libertinust1math`, then
  - \* if you used a `libertine` package that set a value for `\LinuxLibertineT@scale`, then its value is used;
  - \* otherwise, if you used `libertinus-type1` or `libertinus`, then the value of `\LibertinusRM@scale` is used.
- See the new material at the end for a discussion of the new options connected with sans serif in math.

#### SAMPLE INVOCATION:

```
\usepackage[sb]{libertine} % or \usepackage[sb]{libertinus}
\usepackage[T1]{fontenc}
\usepackage{textcomp}
\usepackage[varqu,varl]{zi4}% inconsolata for mono, not LibertineMono
\usepackage{amsthm} % libertinust1math loads amsmath
\usepackage{libertinust1math} % slanted integrals, by default
\usepackage[scr=boondoxo,bb=boodox]{mathalfa} %omit bb=boodox for default libertinus bb
```

#### SOME THINGS TO NOTE:

- The `amsmath` package is loaded, if necessary, by `libertinust1math`. The package depends on a number of its features and improvements to math typesetting.
- There are no bold symbols in `LibertinusMath`, but there are bold Roman and Greek letters, and the same is true of `LibertinusT1Math`.
- The italic letter `v` ( $v$ ) in `LibertinusMath` is easily confused with Greek `\nu` ( $\nu$ ), so the math italic letter `v` is set to  $v$ , and similarly in the bold math version.
- The layout of the `type1` math fonts follows STIX to some extent, as does the `sty` file, though the content of this package is much less rich.
- Dotlessi and dotlessj are available in four math styles—`mathit`, `mathrm`, `mathbf` and `mathbfseries`. For example:

Macro	Result
<code>\imath\$</code>	$i$
<code>\mathrm{\imath}\$</code>	$i$
<code>\mathbf{\imath}\$</code>	$i$
<code>\mathbfseries{\imath}\$</code>	$i$

- There are Greek alphabets in upright and italic shapes, regular and bold weights. Upright Greek letters have names like `\alphaup` (and `\upalpha`) while the italic forms have names like `\alphait`. According to the options you set, `\alpha` and so on are `\let` to the appropriate choice, but you may always use the underlying forms if you wish to use both upright and italic forms in your document.
- Uppercase Greek letters are of type `mathalpha`, so when you write `\mathit{\Gamma}`, you'll get  $\Gamma$ . However, unless you chose the option `lcgreekalpha`, `\mathrm{\beta}` would produce  $\beta$ , as it is of type `mathord` by default.
- There is an upright partial derivative symbol named `\uppartial` that typesets as  $\partial$ , for those who wish to follow ISO rules.
- There are (as of version 1.1) macros for mathematical sans serif: `\mathsf`, `\mathsfseries` (italic sans), `\mathsfbold` (bold sans) and `\mathsfboldseries` (bold sans italic.) See the end of this documentation for details.

- If you use one of the AMS classes such as `amsart` or `amsbook`, then the AMS fonts will be loaded even though not needed, taking up two of your precious sixteen math families. If you are running out of families (“too many math alphabets used in version normal”), use another capable class such as `memoir` or `scrartcl` and gain two more families.

The next pages show the font tables for LibertinusT<sub>1</sub>Math. If you see an unfamiliar symbol and wish to learn its L<sup>A</sup>T<sub>E</sub>X name, get the L<sup>A</sup>T<sub>E</sub>X name of the font (e.g., `operators`, `letters`, `symbols`, `largesymbols`) and the hex location of the glyph (e.g., "FF is hex notation for 255) and search `libertinust1math.sty` by hex number.

## libertinust1-mathrm (operators):

	'o	'1	'2	'3	'4	'5	'6	'7	
'oox	$\Gamma_0$	$\Delta_1$	$\Theta_2$	$\Lambda_3$	$\Xi_4$	$\Pi_5$	$\Sigma_6$	$\Upsilon_7$	"0x
'o1x	$\Phi_8$	$\Psi_9$	$\Omega_{10}$	$\alpha_{11}$	$\beta_{12}$	$\gamma_{13}$	$\delta_{14}$	$\epsilon_{15}$	"1x
'o2x	$\zeta_{16}$	$\eta_{17}$	$\theta_{18}$	$\mathfrak{l}_{19}$	$\kappa_{20}$	$\lambda_{21}$	$\mu_{22}$	$\nu_{23}$	"2x
'o3x	$\xi_{24}$	$\pi_{25}$	$\rho_{26}$	$\sigma_{27}$	$\tau_{28}$	$\upsilon_{29}$	$\phi_{30}$	$\chi_{31}$	"3x
'o4x	$\psi_{32}$	$\omega_{33}$	$\varepsilon_{34}$	$\vartheta_{35}$	$\bar{\omega}_{36}$	$\varrho_{37}$	$\varsigma_{38}$	$\varphi_{39}$	"4x
'o5x	$\nabla_{40}$	$\partial_{41}$	$-_{42}$	$+_ {43}$	$\pm_{44}$	$\mp_{45}$	$(_{46}$	$)_{47}$	"5x
'o6x	$0_{48}$	$1_{49}$	$2_{50}$	$3_{51}$	$4_{52}$	$5_{53}$	$6_{54}$	$7_{55}$	"6x
'o7x	$8_{56}$	$9_{57}$	$\vdots_{58}$	$\ddot{\cdot}_{59}$	$*_{60}$	$=_{61}$	$\$_{62}$	$?_{63}$	"7x
'10x	$!_{64}$	$A_{65}$	$B_{66}$	$C_{67}$	$D_{68}$	$E_{69}$	$F_{70}$	$G_{71}$	"8x
'11x	$H_{72}$	$I_{73}$	$J_{74}$	$K_{75}$	$L_{76}$	$M_{77}$	$N_{78}$	$O_{79}$	"9x
'12x	$P_{80}$	$Q_{81}$	$R_{82}$	$S_{83}$	$T_{84}$	$U_{85}$	$V_{86}$	$W_{87}$	"Ax
'13x	$X_{88}$	$Y_{89}$	$Z_{90}$	$[_{91}$	$\backslash_{92}$	$]_{93}$	$\{_{94}$	$/_{95}$	"Bx
'14x	$\} _{96}$	$a_{97}$	$b_{98}$	$c_{99}$	$d_{100}$	$e_{101}$	$f_{102}$	$g_{103}$	"Cx
'15x	$h_{104}$	$i_{105}$	$j_{106}$	$k_{107}$	$l_{108}$	$m_{109}$	$n_{110}$	$o_{111}$	"Dx
'16x	$p_{112}$	$q_{113}$	$r_{114}$	$s_{115}$	$t_{116}$	$u_{117}$	$v_{118}$	$w_{119}$	"Ex
'17x	$x_{120}$	$y_{121}$	$z_{122}$	$1_{123}$	$J_{124}$	$\#_{125}$	$\%_{126}$	$',_{127}$	"Fx
'20x	$`_{128}$	$'_{129}$	$^{\wedge}_{130}$	$\sim_{131}$	$\bar{ }_{132}$	$\check{ }_{133}$	$\dot{ }_{134}$	$^{..}_{135}$	
'21x	$^?_{136}$	$^o_{137}$	$^v_{138}$	$^\circ_{139}$	$^`_{140}$	$^,_{141}$	$^`_{142}$	$^{-}_{143}$	
'22x	$\overleftarrow{ }_{144}$	$\overleftarrow{ }_{145}$	$\overrightarrow{ }_{146}$	$\cdots_{147}$	$\cdots\cdots_{148}$	$\leftrightarrow_{149}$	$\overline{ }_{150}$	$\overline{ }_{151}$	
'23x	$*_{152}$	$\&_{153}$	$@_{154}$	$\neg_{155}$	$\cdot_{156}$	$\times_{157}$	$\leq_{158}$	$\div_{159}$	
'24x	$Z_{160}$	$\textcolor{red}{A}_1$	$\mathfrak{B}_{162}$	$\dagger_{163}$	$\ddagger_{164}$	$\bullet_{165}$	$\ldots_{166}$	$\ldots_{167}$	
'25x	$\textcolor{blue}{I}_{168}$	$\textcolor{red}{M}_{169}$	$\textcolor{red}{M}/_{170}$	$\textcolor{brown}{N}_{171}$	$\textcolor{red}{M}\textcolor{blue}{M}_{172}$	$\textcolor{red}{M}\textcolor{blue}{M}\textcolor{blue}{M}_{173}$	$\textcolor{brown}{A}^{174}$	$\textcolor{red}{A}!!_{175}$	
'26x	$\blacksquare_{176}$	$\textcolor{brown}{A}_{177}$	$\textcolor{red}{A}??_{178}$	$179$	$\textcolor{red}{A}///_{180}$	$\textcolor{brown}{A}\frac{1}{1}$	$182$	$183$	
'27x	$\textcolor{brown}{A}_{184}$	$185$	$\mathcal{E}_{186}$	$\mathfrak{O}_{187}$	$1_{188}$	$\mathring{A}_{189}$	$\mathfrak{A}_{190}$	$\mathfrak{O}_{191}$	
'30x	$\textcolor{brown}{T}_{192}$	$\textcolor{brown}{L}_{193}$	$\lambda_{194}$	$195$	$\mathfrak{D}_{196}$	$\mathbb{A}_{197}$	$\mathbb{C}_{198}$	$\mathbb{E}_{199}$	
'31x	$\textcolor{brown}{A}_{200}$	$\emptyset_{201}$	$\Delta_{202}$	$\mathbb{E}_{203}$	$\mathfrak{E}_{204}$	$\mathbb{E}_{205}$	$\mathfrak{D}_{206}$	$\mathfrak{D}_{207}$	
'32x	$\mathfrak{B}_{208}$	$\blacksquare_{209}$	$\dot{+}_{210}$	$\succeq_{211}$	$\searrow_{212}$	$\circ_{213}$	$\bullet_{214}$	$\alpha_{215}$	
'33x	$\infty_{216}$	$\textcolor{brown}{L}_{217}$	$\angle_{218}$	$\not\sim_{219}$	$\not\sim_{220}$	$\mid_{221}$	$\frac{1}{222}$	$\parallel_{223}$	
'34x	$\parallel_{224}$	$\wedge_{225}$	$\vee_{226}$	$\cap_{227}$	$\cup_{228}$	$\ddot{\cdot}_{229}$	$\ddot{\cdot}_{230}$	$\mathcal{O}_{231}$	
'35x	$\textcolor{brown}{A}:\_{232}$	$\textcolor{brown}{A}\textcolor{brown}{-}_{233}$	$\textcolor{brown}{A}\textcolor{brown}{-}_{234}$	$\textcolor{brown}{A}\textcolor{brown}{-}_{235}$	$\textcolor{brown}{A}\textcolor{brown}{-}_{236}$	$\sim_{237}$	$\sim_{238}$	$\textcolor{brown}{A}239$	
'36x	$\textcolor{brown}{A}\sim_{240}$	$\textcolor{brown}{A}\textcolor{brown}{-}_{241}$	$\textcolor{brown}{A}\textcolor{brown}{-}_{242}$	$\textcolor{brown}{A}\sim_{243}$	$\textcolor{brown}{A}\sim_{244}$	$\textcolor{brown}{A}\textcolor{brown}{-}_{245}$	$\textcolor{brown}{A}\sim_{246}$	$\textcolor{brown}{A}\sim_{247}$	
'37x	$\textcolor{brown}{A}\neq_{248}$	$\textcolor{brown}{A}\approx_{249}$	$\textcolor{brown}{A}\neq_{250}$	$\textcolor{brown}{A}\approx_{251}$	$\textcolor{brown}{A}\approx_{252}$	$\textcolor{brown}{A}\equiv_{253}$	$\textcolor{brown}{A}\equiv_{254}$	$\textcolor{brown}{A}\approx_{255}$	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathrm (bold-operators):

	$\mathbf{o}$	$\mathbf{1}$	$\mathbf{2}$	$\mathbf{3}$	$\mathbf{4}$	$\mathbf{5}$	$\mathbf{6}$	$\mathbf{7}$	
$\mathbf{\Gamma}_0$	$\mathbf{\Delta}_1$	$\mathbf{\Theta}_2$	$\mathbf{\Lambda}_3$	$\mathbf{\Xi}_4$	$\mathbf{\Pi}_5$	$\mathbf{\Sigma}_6$	$\mathbf{Y}_7$		"0x
$\mathbf{\Phi}_8$	$\mathbf{\Psi}_9$	$\mathbf{\Omega}_{10}$	$\mathbf{\alpha}_{11}$	$\mathbf{\beta}_{12}$	$\mathbf{\gamma}_{13}$	$\mathbf{\delta}_{14}$	$\mathbf{\epsilon}_{15}$		"1x
$\mathbf{\zeta}_{16}$	$\mathbf{\eta}_{17}$	$\mathbf{\theta}_{18}$	$\mathbf{\iota}_{19}$	$\mathbf{\kappa}_{20}$	$\mathbf{\lambda}_{21}$	$\mathbf{\mu}_{22}$	$\mathbf{\nu}_{23}$		"2x
$\mathbf{\xi}_{24}$	$\mathbf{\pi}_{25}$	$\mathbf{\rho}_{26}$	$\mathbf{\sigma}_{27}$	$\mathbf{\tau}_{28}$	$\mathbf{\omega}_{29}$	$\mathbf{\phi}_{30}$	$\mathbf{\chi}_{31}$		"3x
$\mathbf{\psi}_{32}$	$\mathbf{\omega}_{33}$	$\mathbf{\varepsilon}_{34}$	$\mathbf{\vartheta}_{35}$	$\mathbf{\varpi}_{36}$	$\mathbf{\varrho}_{37}$	$\mathbf{\varsigma}_{38}$	$\mathbf{\varphi}_{39}$		"4x
$\mathbf{\nabla}_{40}$	$\mathbf{\partial}_{41}$	$-_{42}$	$+_{43}$	$\pm_{44}$	$\mp_{45}$	$(_{46}$	$)_{47}$		"5x
$\mathbf{0}_{48}$	$\mathbf{1}_{49}$	$\mathbf{2}_{50}$	$\mathbf{3}_{51}$	$\mathbf{4}_{52}$	$\mathbf{5}_{53}$	$\mathbf{6}_{54}$	$\mathbf{7}_{55}$		"6x
$\mathbf{8}_{56}$	$\mathbf{9}_{57}$	$\vdots_{58}$	$\ddot{\cdot}_{59}$	$\ast_{60}$	$=_{61}$	$\$_{62}$	$?_{63}$		"7x
$\mathbf{A}_{65}$	$\mathbf{B}_{66}$	$\mathbf{C}_{67}$	$\mathbf{D}_{68}$	$\mathbf{E}_{69}$	$\mathbf{F}_{70}$	$\mathbf{G}_{71}$			"8x
$\mathbf{H}_{72}$	$\mathbf{I}_{73}$	$\mathbf{J}_{74}$	$\mathbf{K}_{75}$	$\mathbf{L}_{76}$	$\mathbf{M}_{77}$	$\mathbf{N}_{78}$	$\mathbf{O}_{79}$		"9x
$\mathbf{P}_{80}$	$\mathbf{Q}_{81}$	$\mathbf{R}_{82}$	$\mathbf{S}_{83}$	$\mathbf{T}_{84}$	$\mathbf{U}_{85}$	$\mathbf{V}_{86}$	$\mathbf{W}_{87}$		"Ex
$\mathbf{X}_{88}$	$\mathbf{Y}_{89}$	$\mathbf{Z}_{90}$	$[_{91}$	$\backslash_{92}$	$]_{93}$	$\{_{94}$	$/_{95}$		"Fx
$\mathbf{\}96}$	$\mathbf{a}_{97}$	$\mathbf{b}_{98}$	$\mathbf{c}_{99}$	$\mathbf{d}_{100}$	$\mathbf{e}_{101}$	$\mathbf{f}_{102}$	$\mathbf{g}_{103}$		
$\mathbf{h}_{104}$	$\mathbf{i}_{105}$	$\mathbf{j}_{106}$	$\mathbf{k}_{107}$	$\mathbf{l}_{108}$	$\mathbf{m}_{109}$	$\mathbf{n}_{110}$	$\mathbf{o}_{111}$		
$\mathbf{p}_{112}$	$\mathbf{q}_{113}$	$\mathbf{r}_{114}$	$\mathbf{s}_{115}$	$\mathbf{t}_{116}$	$\mathbf{u}_{117}$	$\mathbf{v}_{118}$	$\mathbf{w}_{119}$		
$\mathbf{x}_{120}$	$\mathbf{y}_{121}$	$\mathbf{z}_{122}$	$\mathbf{l}_{123}$	$\mathbf{j}_{124}$	$\#_{125}$	$\%_{126}$	$,$		
$\mathbf{\`{128}}$	$\mathbf{\^{129}}$	$\mathbf{\~{130}}$	$\mathbf{\~{131}}$	$\mathbf{\-{132}}$	$\mathbf{\~{133}}$	$\mathbf{\.{134}}$	$\mathbf{\^{135}}$		
$\mathbf{\^{\prime}}_{136}$	$\mathbf{\circ}_{137}$	$\mathbf{\vee}_{138}$	$\mathbf{\diamond}_{139}$	$\mathbf{\wedge}_{140}$	$\mathbf{\wedge}_{141}$	$\mathbf{\wedge}_{142}$	$\mathbf{\wedge}_{143}$		
$\mathbf{\rightarrow}_{144}$	$\mathbf{\leftarrow}_{145}$	$\mathbf{\rightarrow}_{146}$	$\mathbf{\cdots}_{147}$	$\mathbf{\cdots}_{148}$	$\mathbf{\leftrightarrow}_{149}$	$\mathbf{\lceil}_{150}$	$\mathbf{\rceil}_{151}$		
$\mathbf{\&}_{152}$	$\mathbf{\&@}_{153}$	$\mathbf{@}_{154}$	$\mathbf{\neg}_{155}$	$\mathbf{\cdot}_{156}$	$\mathbf{\times}_{157}$	$\mathbf{\leq}_{158}$	$\mathbf{\div}_{159}$		
$\mathbf{\Zeta}_{160}$	$\mathbf{\textsf{A}}_{161}$	$\mathbf{\textsf{B}}_{162}$	$\mathbf{\textsf{C}}_{163}$	$\mathbf{\textsf{D}}_{164}$	$\mathbf{\textsf{E}}_{165}$	$\mathbf{\textsf{F}}_{166}$	$\mathbf{\textsf{G}}_{167}$		"Ax
$\mathbf{\textsf{H}}_{168}$	$\mathbf{\textsf{I}}_{169}$	$\mathbf{\textsf{J}}_{170}$	$\mathbf{\textsf{K}}_{171}$	$\mathbf{\textsf{L}}_{172}$	$\mathbf{\textsf{M}}_{173}$	$\mathbf{\textsf{N}}_{174}$	$\mathbf{\textsf{O}}_{175}$		"Bx
$\mathbf{\textsf{P}}_{176}$	$\mathbf{\textsf{Q}}_{177}$	$\mathbf{\textsf{R}}_{178}$	$\mathbf{\textsf{S}}_{179}$	$\mathbf{\textsf{T}}_{180}$	$\mathbf{\textsf{U}}_{181}$	$\mathbf{\textsf{V}}_{182}$	$\mathbf{\textsf{W}}_{183}$		"Cx
$\mathbf{\textsf{X}}_{184}$	$\mathbf{\textsf{Y}}_{185}$	$\mathbf{\textsf{Z}}_{186}$	$\mathbf{\textsf{O}}_{187}$	$\mathbf{\textsf{I}}_{188}$	$\mathbf{\textsf{A}}_{189}$	$\mathbf{\textsf{E}}_{190}$	$\mathbf{\textsf{D}}_{191}$		"Dx
$\mathbf{\textsf{J}}_{192}$	$\mathbf{\textsf{L}}_{193}$	$\mathbf{\textsf{K}}_{194}$	$\mathbf{\textsf{V}}_{195}$	$\mathbf{\textsf{X}}_{196}$	$\mathbf{\textsf{V}}_{197}$	$\mathbf{\textsf{C}}_{198}$	$\mathbf{\textsf{E}}_{199}$		"Ex
$\mathbf{\textsf{Z}}_{200}$	$\mathbf{\textsf{O}}_{201}$	$\mathbf{\textsf{D}}_{202}$	$\mathbf{\textsf{E}}_{203}$	$\mathbf{\textsf{E}}_{204}$	$\mathbf{\textsf{E}}_{205}$	$\mathbf{\textsf{E}}_{206}$	$\mathbf{\textsf{D}}_{207}$		"Fx
$\mathbf{\textsf{B}}_{208}$	$\mathbf{\textsf{B}}_{209}$	$\dot{\mathbf{\textsf{B}}}_{210}$	$\geq_{211}$	$\backslash_{212}$	$\circ_{213}$	$\bullet_{214}$	$\infty_{215}$		
$\mathbf{\textsf{B}}_{217}$	$\mathbf{\textsf{L}}_{217}$	$\mathbf{\textsf{L}}_{218}$	$\mathbf{\textsf{A}}_{219}$	$\mathbf{\textsf{A}}_{220}$	$\parallel_{221}$	$\{_{222}$	$\parallel_{223}$		
$\mathbf{\textsf{B}}_{224}$	$\mathbf{\textsf{B}}_{225}$	$\mathbf{\textsf{V}}_{226}$	$\cap_{227}$	$\cup_{228}$	$\cdot\cdot_{229}$	$\cdot\cdot_{230}$	$\emptyset_{231}$		
$\mathbf{\textsf{B}}_{232}$	$\mathbf{\textsf{B}}_{233}$	$\mathbf{\textsf{B}}_{234}$	$\mathbf{\textsf{B}}_{235}$	$\mathbf{\textsf{B}}_{236}$	$\sim_{237}$	$\sim_{238}$	$\infty_{239}$		
$\mathbf{\textsf{B}}_{240}$	$\mathbf{\textsf{B}}_{241}$	$\mathbf{\textsf{B}}_{242}$	$\approx_{243}$	$\simeq_{244}$	$\neq_{245}$	$\cong_{246}$	$\cong_{247}$		
$\mathbf{\textsf{B}}_{248}$	$\mathbf{\textsf{B}}_{249}$	$\mathbf{\textsf{B}}_{250}$	$\cong_{251}$	$\approx_{252}$	$\cong_{253}$	$\mathbf{\textsf{B}}_{254}$	$\approx_{255}$		
"8	"9	"A	"B	"C	"D	"E	"F		

libertinust1-mathit (letters):

	'o	'1	'2	'3	'4	'5	'6	'7	
'oox	$\Gamma_0$	$\Delta_1$	$\Theta_2$	$\Lambda_3$	$\Xi_4$	$\Pi_5$	$\Sigma_6$	$Y_7$	'0x
'o1x	$\Phi_8$	$\Psi_9$	$\Omega_{10}$	$\alpha_{11}$	$\beta_{12}$	$\gamma_{13}$	$\delta_{14}$	$\epsilon_{15}$	
'o2x	$\zeta_{16}$	$\eta_{17}$	$\theta_{18}$	$\iota_{19}$	$\kappa_{20}$	$\lambda_{21}$	$\mu_{22}$	$\nu_{23}$	'1x
'o3x	$\xi_{24}$	$\pi_{25}$	$\rho_{26}$	$\sigma_{27}$	$\tau_{28}$	$\upsilon_{29}$	$\phi_{30}$	$\chi_{31}$	
'o4x	$\psi_{32}$	$\omega_{33}$	$\varepsilon_{34}$	$\vartheta_{35}$	$\varpi_{36}$	$\varrho_{37}$	$\varsigma_{38}$	$\varphi_{39}$	'2x
'o5x	$\nabla_{40}$	$\partial_{41}$	$\aleph_{42}$	$\beth_{43}$	$\beth_{44}$	$\daleth_{45}$	$\triangleright_{46}$	$\triangleleft_{47}$	
'o6x	$0_{48}$	$1_{49}$	$2_{50}$	$3_{51}$	$4_{52}$	$5_{53}$	$6_{54}$	$7_{55}$	'3x
'o7x	$8_{56}$	$9_{57}$	$.58$	$.59$	$<_{60}$	$\hbar_{61}$	$>_{62}$	$\star_{63}$	
'o10x	$\lessgtr_{64}$	$A_{65}$	$B_{66}$	$C_{67}$	$D_{68}$	$E_{69}$	$F_{70}$	$G_{71}$	'4x
'o11x	$H_{72}$	$I_{73}$	$J_{74}$	$K_{75}$	$L_{76}$	$M_{77}$	$N_{78}$	$O_{79}$	
'o12x	$P_{80}$	$Q_{81}$	$R_{82}$	$S_{83}$	$T_{84}$	$U_{85}$	$V_{86}$	$W_{87}$	'5x
'o13x	$X_{88}$	$Y_{89}$	$Z_{90}$	$\flat_{91}$	$\natural_{92}$	$\sharp_{93}$	$\smile_{94}$	$\frown_{95}$	
'o14x	$\hbar_{96}$	$a_{97}$	$b_{98}$	$c_{99}$	$d_{100}$	$e_{101}$	$f_{102}$	$g_{103}$	'6x
'o15x	$h_{104}$	$i_{105}$	$j_{106}$	$k_{107}$	$l_{108}$	$m_{109}$	$n_{110}$	$o_{111}$	
'o16x	$p_{112}$	$q_{113}$	$r_{114}$	$s_{115}$	$t_{116}$	$u_{117}$	$v_{118}$	$w_{119}$	'7x
'o17x	$x_{120}$	$y_{121}$	$z_{122}$	$l_{123}$	$J_{124}$	$\gtrless_{125}$	$\ll_{126}$	$\overbrace{\phantom{...}}_{127}$	
'o20x	$^{\wedge}_{128}$	$^{\prime}_{129}$	$^{\wedge}_{130}$	$^{\sim}_{131}$	$^{-}_{132}$	$^{\vee}_{133}$	$^{\cdot}_{134}$	$^{..}_{135}$	'8x
'o21x	$^{\circ}_{136}$	$^{\circ}_{137}$	$^{\vee}_{138}$	$^{\circ}_{139}$	$^{\circ}_{140}$	$^{\prime}_{141}$	$^{\prime}_{142}$	$\overleftarrow{\phantom{...}}_{143}$	
'o22x	$\rightarrow_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$\cdots_{147}$	$\cdots_{148}$	$\leftrightarrow_{149}$	$\overbrace{\phantom{...}}_{150}$	$\overbrace{\phantom{...}}_{151}$	'9x
'o23x	$*$ <sub>152</sub>	$-$ <sub>153</sub>	$\wedge_{154}$	$\sim_{155}$	$\vee_{156}$	$\wedge_{157}$	$\sim_{158}$	$\vee_{159}$	
'o24x	$\overbrace{\phantom{...}}_{160}$	$\overbrace{\phantom{...}}_{161}$	$\overbrace{\phantom{...}}_{162}$	$\overbrace{\phantom{...}}_{163}$	$\overbrace{\phantom{...}}_{164}$	$\overbrace{\phantom{...}}_{165}$	$\overbrace{\phantom{...}}_{166}$	$\overbrace{\phantom{...}}_{167}$	'Ax
'o25x	$\overbrace{\phantom{...}}_{168}$	$\overbrace{\phantom{...}}_{169}$	$\overbrace{\phantom{...}}_{170}$	$\overbrace{\phantom{...}}_{171}$	$\overbrace{\phantom{...}}_{172}$	$\overbrace{\phantom{...}}_{173}$	$\overbrace{\phantom{...}}_{174}$	$\overbrace{\phantom{...}}_{175}$	
'o26x	$\overbrace{\phantom{...}}_{176}$	$\overbrace{\phantom{...}}_{177}$	$\overbrace{\phantom{...}}_{178}$	$\overbrace{\phantom{...}}_{179}$	$\overbrace{\phantom{...}}_{180}$	$\overbrace{\phantom{...}}_{181}$	$\overbrace{\phantom{...}}_{182}$	$\overbrace{\phantom{...}}_{183}$	'Bx
'o27x	$\gg_{184}$	$\flat_{185}$	$\not\ast_{186}$	$\not\ast_{187}$	$\not\ast_{188}$	$\not\ast_{189}$	$\not\ast_{190}$	$\lesssim_{191}$	
'o30x	$\gtrapprox_{192}$	$\not\gtrapprox_{193}$	$\not\gtrapprox_{194}$	$\gtrapprox_{195}$	$\gtrapprox_{196}$	$\not\gtrapprox_{197}$	$\not\gtrapprox_{198}$	$\lessapprox_{199}$	'Cx
'o31x	$\gtrsim_{200}$	$\lessapprox_{201}$	$\gtrsim_{202}$	$\lessapprox_{203}$	$\gtrsim_{204}$	$\not\gtrsim_{205}$	$\not\gtrsim_{206}$	$\subset_{207}$	
'o32x	$\supset_{208}$	$\not\subset_{209}$	$\not\supset_{210}$	$\subseteq_{211}$	$\supseteq_{212}$	$\not\subseteq_{213}$	$\not\supseteq_{214}$	$\subseteq_{215}$	'Dx
'o33x	$\not\supset_{216}$	$\not\subseteq_{217}$	$\not\supseteq_{218}$	$\not\subseteq_{219}$	$\supseteq_{220}$	$\supseteq_{221}$	$\subseteq_{222}$	$\supseteq_{223}$	
'o34x	$\sqcap_{224}$	$\sqcup_{225}$	$\oplus_{226}$	$\Theta_{227}$	$\otimes_{228}$	$\oslash_{229}$	$\odot_{230}$	$\odot_{231}$	'Ex
'o35x	$\oplus_{232}$	$\ominus_{233}$	$\Theta_{234}$	$\boxplus_{235}$	$\boxminus_{236}$	$\boxtimes_{237}$	$\boxdot_{238}$	$\vdash_{239}$	
'o36x	$\dashv_{240}$	$\top_{241}$	$\perp_{242}$	$\vdash_{243}$	$\models_{244}$	$\models_{245}$	$\Vdash_{246}$	$\Vdash_{247}$	'Fx
'o37x	$\Vdash_{248}$	$\dashv_{249}$	$\models_{250}$	$\models_{251}$	$\models_{252}$	$\models_{253}$	$\not\models_{254}$	$\models_{255}$	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathit-bold (bold-letters):

	'o	'1	'2	'3	'4	'5	'6	'7	
'oox	$\Gamma_0$	$\Delta_1$	$\Theta_2$	$\Lambda_3$	$\Xi_4$	$\Pi_5$	$\Sigma_6$	$Y_7$	"0x
'o1x	$\Phi_8$	$\Psi_9$	$\Omega_{10}$	$\alpha_{11}$	$\beta_{12}$	$\gamma_{13}$	$\delta_{14}$	$\epsilon_{15}$	
'o2x	$\zeta_{16}$	$\eta_{17}$	$\theta_{18}$	$\iota_{19}$	$\kappa_{20}$	$\lambda_{21}$	$\mu_{22}$	$\nu_{23}$	"1x
'o3x	$\xi_{24}$	$\pi_{25}$	$\rho_{26}$	$\sigma_{27}$	$\tau_{28}$	$\upsilon_{29}$	$\phi_{30}$	$\chi_{31}$	
'o4x	$\psi_{32}$	$\omega_{33}$	$\varepsilon_{34}$	$\vartheta_{35}$	$\varpi_{36}$	$\varrho_{37}$	$\varsigma_{38}$	$\varphi_{39}$	"2x
'o5x	$\nabla_{40}$	$\partial_{41}$	$\aleph_{42}$	$\beth_{43}$	$\lambda_{44}$	$\daleth_{45}$	$\triangleright_{46}$	$\triangleleft_{47}$	
'o6x	$\mathbf{0}_{48}$	$\mathbf{1}_{49}$	$\mathbf{2}_{50}$	$\mathbf{3}_{51}$	$\mathbf{4}_{52}$	$\mathbf{5}_{53}$	$\mathbf{6}_{54}$	$\mathbf{7}_{55}$	"3x
'o7x	$\mathbf{8}_{56}$	$\mathbf{9}_{57}$	.58	.59	<60	$\hbar_{61}$	>62	$\star_{63}$	
'o10x	$\lessgtr_{64}$	$A_{65}$	$B_{66}$	$C_{67}$	$D_{68}$	$E_{69}$	$F_{70}$	$G_{71}$	"4x
'o11x	$H_{72}$	$I_{73}$	$J_{74}$	$K_{75}$	$L_{76}$	$M_{77}$	$N_{78}$	$O_{79}$	
'o12x	$P_{80}$	$Q_{81}$	$R_{82}$	$S_{83}$	$T_{84}$	$U_{85}$	$V_{86}$	$W_{87}$	"5x
'o13x	$X_{88}$	$Y_{89}$	$Z_{90}$	$\flat_{91}$	$\natural_{92}$	$\sharp_{93}$	$\smile_{94}$	$\frown_{95}$	
'o14x	$\hbar_{96}$	$a_{97}$	$b_{98}$	$c_{99}$	$d_{100}$	$e_{101}$	$f_{102}$	$g_{103}$	"6x
'o15x	$h_{104}$	$i_{105}$	$j_{106}$	$k_{107}$	$l_{108}$	$m_{109}$	$n_{110}$	$o_{111}$	
'o16x	$p_{112}$	$q_{113}$	$r_{114}$	$s_{115}$	$t_{116}$	$u_{117}$	$v_{118}$	$w_{119}$	"7x
'o17x	$x_{120}$	$y_{121}$	$z_{122}$	$\mathbf{l}_{123}$	$J_{124}$	$\gtrless_{125}$	$\ll_{126}$	$\curvearrowright_{127}$	
'o20x	'128	'129	'130	'131	'132	'133	'134	'135	"8x
'o21x	'136	'137	'138	'139	'140	'141	'142	'143	
'o22x	'144	'145	'146	'147	'148	'149	'150	'151	"9x
'o23x	*'152	'153	'154	'155	'156	'157	'158	'159	
'o24x	'160	'161	'162	'163	'164	'165	'166	'167	"Ax
'o25x	'168	'169	'170	'171	'172	'173	'174	'175	
'o26x	'176	'177	'178	'179	'180	'181	'182	'183	"Bx
'o27x	$\gg_{184}$	$\flat_{185}$	$\not\ast_{186}$	$\not\#_{187}$	$\not\times_{188}$	$\not\&_{189}$	$\not\geq_{190}$	$\lesssim_{191}$	
'o30x	$\gtrsim_{192}$	$\not\leq_{193}$	$\not\geq_{194}$	$\lessgtr_{195}$	$\gtrless_{196}$	$\not\gtrless_{197}$	$\not\gtrsim_{198}$	$\prec_{199}$	"Cx
'o31x	$\succ_{200}$	$\lessgtr_{201}$	$\gtrless_{202}$	$\lesssim_{203}$	$\gtrsim_{204}$	$\not\prec_{205}$	$\not\succ_{206}$	$\subset_{207}$	
'o32x	$\supset_{208}$	$\not\subset_{209}$	$\not\supset_{210}$	$\subseteq_{211}$	$\supseteq_{212}$	$\not\subseteq_{213}$	$\not\supseteq_{214}$	$\subseteq_{215}$	"Dx
'o33x	$\not\supset_{216}$	$\not\subset_{217}$	$\not\supset_{218}$	$\not\subset_{219}$	$\subseteq_{220}$	$\supseteq_{221}$	$\not\subseteq_{222}$	$\supseteq_{223}$	
'o34x	$\sqcap_{224}$	$\sqcup_{225}$	$\oplus_{226}$	$\ominus_{227}$	$\otimes_{228}$	$\oslash_{229}$	$\odot_{230}$	$\oslash_{231}$	"Ex
'o35x	$\oplus_{232}$	$\ominus_{233}$	$\Theta_{234}$	$\boxplus_{235}$	$\boxminus_{236}$	$\boxtimes_{237}$	$\boxdot_{238}$	$\vdash_{239}$	
'o36x	$\dashv_{240}$	$\top_{241}$	$\perp_{242}$	$\vdash_{243}$	$\models_{244}$	$\models_{245}$	$\Vdash_{246}$	$\Vdash_{247}$	"Fx
'o37x	$\Vdash_{248}$	$\Vdash_{249}$	$\Vdash_{250}$	$\Vdash_{251}$	$\Vdash_{252}$	$\Vdash_{253}$	$\not\vdash_{254}$	$\dashv_{255}$	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathsym (symbols):

	'o	'1	'2	'3	'4	'5	'6	'7	
'00x	$\cong_0$	$\bowtie_1$	$\bowtie_2$	$\int_3$	$\iint_4$	$\iiint_5$	$\oint_6$	$\iiii_7$	"0x
'01x	$\int_8$	$\iint_9$	$\iiint_{10}$	$\oint_{11}$	$\simeq_{12}$	$\vee_{20}$	$\wedge_{21}$	$\sum_{22}$	"1x
'02x	$\bowtie_{16}$	$\Pi_{17}$	$\amalg_{18}$	$\simeq_{19}$	$\vee_{20}$	$\wedge_{21}$	$\perp_{23}$		
'03x	$\mathfrak{H}_{24}$	$\backslash_{25}$	$/_{26}$	$\setminus_{27}$	$\lessdot_{28}$	$\gtrdot_{29}$	$\lll_{30}$	$\ggg_{31}$	
'04x	$\lessapprox_{32}$	$\gtrapprox_{33}$	$\lessdot_{34}$	$\gtrdot_{35}$	$\lessdot_{36}$	$\gtrdot_{37}$	$\not\approx_{38}$	$\not\approx_{39}$	"2x
'05x	$\ntriangleleft_{40}$	$\ntriangleright_{41}$	$\ntrianglelefteq_{42}$	$\ntrianglerighteq_{43}$	$\nlessapprox_{44}$	$\ngtrapprox_{45}$	$\nlessapprox_{46}$	$\ngtrapprox_{47}$	
'06x	$\ntriangleleft_{48}$	$\ntriangleright_{49}$	$\ntrianglelefteq_{50}$	$\ntrianglerighteq_{51}$	$\vdots_{52}$	$\cdots_{53}$	$\ddots_{54}$	$\ddots_{55}$	"3x
'07x	$\ntriangleleft_{56}$	$\nleqq_{57}$	$\nleqslant_{58}$	$\nleq_{59}$	$\nleqslant_{60}$	$\nleq_{61}$	$62$	$F_{63}$	
'10x	$\exists_{64}$	$65$	$66$	$\leftarrow_{67}$	$\uparrow_{68}$	$\rightarrow_{69}$	$\downarrow_{70}$	$\leftrightarrow_{71}$	"4x
'11x	$\uparrow_{72}$	$\nwarrow_{73}$	$\nearrow_{74}$	$\searrow_{75}$	$\swarrow_{76}$	$\leftleftarrows_{77}$	$\rightarrowtail_{78}$	$\leftleftarrows_{79}$	
'12x	$\rightarrowtail_{80}$	$\leftleftarrows_{81}$	$\rightarrowtail_{82}$	$\leftrightarrowtail_{83}$	$\leftarrow_{84}$	$\leftarrow_{85}$	$\rightarrow_{86}$	$\rightarrowtail_{87}$	"5x
'13x	$\rightleftarrows_{88}$	$\rightleftarrows_{89}$	$\leftarrow_{90}$	$\rightarrow_{91}$	$\leftrightarrow_{92}$	$\leftarrow_{93}$	$\rightarrowtail_{94}$	$\emptyset_{95}$	
'14x	$\doteq_{96}$	$\doteq_{97}$	$\doteq_{98}$	$\doteq_{99}$	$\doteq_{100}$	$\doteq_{101}$	$=_{102}$	$\equiv_{103}$	"6x
'15x	$\triangleq_{104}$	$\equiv_{105}$	$\triangleq_{106}$	$\asymp_{107}$	$\triangleq_{108}$	$\triangleq_{109}$	$\triangleq_{110}$	$\triangleq_{111}$	
'16x	$\stackrel{?}{=}_{112}$	$\neq_{113}$	$\equiv_{114}$	$\neq_{115}$	$\mid_{116}$	$\mid_{117}$	$\equiv_{118}$	$\leq_{119}$	"7x
'17x	$\geq_{120}$	$\leqq_{121}$	$\geqq_{122}$	$\Re_{123}$	$\Im_{124}$	$\wp_{125}$	$\square_{126}$	$\frown_{127}$	
'20x	$\clubsuit_{128}$	$\diamondsuit_{129}$	$\heartsuit_{130}$	$\spadesuit_{131}$	$\natural_{132}$	$\circ_{133}$	$\S_{134}$	$\P_{135}$	"8x
'21x	$\checkmark_{136}$	$\overline{\phantom{x}}_{137}$	$\overline{\phantom{x}}_{138}$	$\ell_{139}$	$\wp_{140}$	$\wp_{141}$	$142$	$143$	
'22x	$144$	$145$	$146$	$147$	$148$	$149$	$150$	$151$	"9x
'23x	$152$	$153$	$154$	$\Gamma_{155}$	$156$	$157$	$158$	$159$	
'26x	$176$	$177$	$178$	$179$	$180$	$181$	$\sqcup_{182}$	$\blacksquare_{183}$	"Bx
'27x	$\square_{184}$	$185$	$186$	$187$	$188$	$189$	$190$	$191$	
'30x	$192$	$193$	$194$	$195$	$196$	$197$	$198$	$199$	"Cx
'31x	$200$	$\blacktriangle_{201}$	$\triangle_{202}$	$203$	$204$	$\blacktriangleright_{205}$	$\triangleright_{206}$	$207$	
'32x	$208$	$209$	$210$	$\blacktriangledown_{211}$	$\triangledown_{212}$	$213$	$214$	$\blacktriangleleft_{215}$	"Dx
'33x	$\blacktriangleleft_{216}$	$\longleftarrow_{217}$	$\Longrightarrow_{218}$	$\Longleftarrow_{219}$	$\Longleftarrow_{220}$	$\blacklozenge_{221}$	$\lozenge_{222}$	$\Longrightarrow_{223}$	
'34x	$\odot_{224}$	$\lozenge_{225}$	$\circlearrowleft_{226}$	$\neg_{227}$	$\equiv_{228}$	$\circlearrowright_{229}$	$\bullet_{230}$	$231$	"Ex
'35x	$232$	$233$	$234$	$235$	$236$	$237$	$238$	$\not\equiv_{239}$	
'36x	$\not\leftrightarrow_{240}$	$\not\Rightarrow_{241}$	$\Leftarrow_{242}$	$\Uparrow_{243}$	$\Rightarrow_{244}$	$\Downarrow_{245}$	$\Leftrightarrow_{246}$	$\Updownarrow_{247}$	"Fx
'37x	$\nwarrow_{248}$	$\nearrow_{249}$	$\searrow_{250}$	$\swarrow_{251}$	$\Longleftarrow_{252}$	$\circ_{253}$	$\diamond_{254}$	$\Longrightarrow_{255}$	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathex (largesymbols):

	'o	'1	'2	'3	'4	'5	'6	'7	
'00x	( <sub>o</sub> ) <sub>1</sub>		<sub>2</sub>	<sub>3</sub>	[ <sub>4</sub> ) <sub>5</sub>		<sub>6</sub>	<sub>7</sub>	"0x
'01x	[ <sub>8</sub> ) <sub>9</sub>		[ <sub>10</sub> ) <sub>11</sub>		{ <sub>12</sub> ) <sub>13</sub>		<sub>14</sub>	<sub>15</sub>	"1x
'02x	<sub>16</sub> ) <sub>17</sub>	<sub>18</sub>	<sub>19</sub>	<sub>20</sub>	<sub>21</sub>	/ <sub>22</sub>	\ <sub>23</sub>		"2x
'03x	( <sub>24</sub> ) <sub>25</sub>	<sub>26</sub>	<sub>27</sub>	[ <sub>28</sub> ) <sub>29</sub>		<sub>30</sub>	<sub>31</sub>		"3x
'04x	[ <sub>32</sub> ) <sub>33</sub>	[ <sub>34</sub> ) <sub>35</sub>		{ <sub>36</sub> ) <sub>37</sub>		<sub>38</sub>	<sub>39</sub>		"4x
'05x	<sub>40</sub> ) <sub>41</sub>	<sub>42</sub>	<sub>43</sub>	<sub>44</sub> ) <sub>45</sub>		/ <sub>46</sub>	\ <sub>47</sub>		"5x
'06x	( <sub>48</sub> ) <sub>49</sub>	<sub>50</sub>	<sub>51</sub>	[ <sub>52</sub> ) <sub>53</sub>		<sub>54</sub>	<sub>55</sub>		"6x
'07x	[ <sub>56</sub> ) <sub>57</sub>	[ <sub>58</sub> ) <sub>59</sub>		{ <sub>60</sub> ) <sub>61</sub>		<sub>62</sub>	<sub>63</sub>		"7x
'10x	<sub>64</sub> ) <sub>65</sub>	<sub>66</sub>	<sub>67</sub>	<sub>68</sub> ) <sub>69</sub>		/ <sub>70</sub>	\ <sub>71</sub>		
'11x	( <sub>72</sub> ) <sub>73</sub>	<sub>74</sub>	<sub>75</sub>	[ <sub>76</sub> ) <sub>77</sub>		<sub>78</sub>	<sub>79</sub>		
'12x	[ <sub>80</sub> ) <sub>81</sub>	[ <sub>82</sub> ) <sub>83</sub>		{ <sub>84</sub> ) <sub>85</sub>		<sub>86</sub>	<sub>87</sub>		
'13x	<sub>88</sub> ) <sub>89</sub>	<sub>90</sub>	<sub>91</sub>	<sub>92</sub> ) <sub>93</sub>		/ <sub>94</sub>	\ <sub>95</sub>		
'14x	( <sub>96</sub> ) <sub>97</sub>	[ <sub>98</sub> ) <sub>99</sub>	[ <sub>100</sub> ) <sub>101</sub>	[ <sub>102</sub> ) <sub>103</sub>					
'15x	c <sub>104</sub> ) <sub>105</sub>	c <sub>106</sub> ) <sub>107</sub>	J <sub>108</sub> ) <sub>109</sub>	I <sub>110</sub> ) <sub>111</sub>					
'16x	<sub>112</sub> ) <sub>113</sub>	<sub>114</sub> ) <sub>115</sub>		\ <sub>116</sub> ) <sub>117</sub>		\ <sub>118</sub> ) <sub>119</sub>			
'17x	<sub>120</sub> ) <sub>121</sub>		\ <sub>122</sub> ) <sub>123</sub>	\ <sub>124</sub> ) <sub>125</sub>		\ <sub>126</sub> ) <sub>127</sub>			

$'20x$	$\iint_{128}$	$\iint_{129}$	$\iiint_{130}$	$\iiii_{131}$	$\oint_{132}$	$\oint_{133}$	$\iiii_{134}$	$\iiiii_{135}$	$"8x$
$'21x$	$\int_{136}$	$\int_{137}$	$\iint_{138}$	$\iint_{139}$	$\iiii_{140}$	$\iiii_{141}$	$\oint_{142}$	$\oint_{143}$	
$'22x$	$\iiii_{144}$	$\iiii_{145}$	$\oint_{146}$	$\oint_{147}$	$\oint_{148}$	$\oint_{149}$	$150$	$151$	$"9x$
$'23x$	$152$	$153$	$154$	$155$	$156$	$157$	$158$	$159$	
$'26x$	$\prod_{176}$	$\prod_{177}$	$\coprod_{178}$	$\sum_{179}$	$\wedge_{180}$	$\vee_{181}$	$\cap_{182}$	$\cup_{183}$	$"Bx$
$'27x$	$/_{184}$	$\backslash_{185}$	$\odot_{186}$	$\oplus_{187}$	$\otimes_{188}$	$\cup_{189}$	$\cup_{190}$	$\cap_{191}$	
$'30x$	$\sqcup_{192}$	$193$	$194$	$195$	$196$	$197$	$198$	$\prod_{199}$	$"Cx$
$'31x$	$\coprod_{200}$	$\sum_{201}$	$\wedge_{202}$	$\vee_{203}$	$\cap_{204}$	$\cup_{205}$	$/_{206}$	$\backslash_{207}$	
$'32x$	$\odot_{208}$	$\oplus_{209}$	$\otimes_{210}$	$\cup_{211}$	$\cup_{212}$	$\cap_{213}$	$\sqcup_{214}$	$215$	$"Dx$
$'33x$	$216$	$217$	$218$	$219$	$(_{220}$	$)_{221}$	$222$	$223$	
$'34x$	$\llbracket_{224}$	$\rrbracket_{225}$	$\lfloor_{226}$	$\lceil_{227}$	$\lceil_{228}$	$\rfloor_{229}$	$\int_{230}$	$\{\}_{231}$	$"Ex$
$'35x$	$232$	$233$	$\langle_{234}$	$\rangle_{235}$	$236$	$237$	$238$	$239$	
$'36x$	$ _{240}$	$\parallel_{241}$	$242$	$ _{243}$	$\parallel_{244}$	$245$	$246$	$247$	$"Fx$
$'37x$	$248$	$\sqrt^{249}$	$250$	$251$	$252$	$253$	$254$	$255$	
	$"8$	$"9$	$"A$	$"B$	$"C$	$"D$	$"E$	$"F$	

`libertinust1-mathbb` (`\mathbb`):

	'o	'1	'2	'3	'4	'5	'6	'7	
'10x	<sub>64</sub>	<b>A</b> <sub>65</sub>	<b>B</b> <sub>66</sub>	<b>C</b> <sub>67</sub>	<b>D</b> <sub>68</sub>	<b>E</b> <sub>69</sub>	<b>F</b> <sub>70</sub>	<b>G</b> <sub>71</sub>	"4x
'11x	H <sub>72</sub>	I <sub>73</sub>	J <sub>74</sub>	K <sub>75</sub>	L <sub>76</sub>	M <sub>77</sub>	N <sub>78</sub>	O <sub>79</sub>	
'12x	P <sub>80</sub>	Q <sub>81</sub>	R <sub>82</sub>	S <sub>83</sub>	T <sub>84</sub>	U <sub>85</sub>	V <sub>86</sub>	W <sub>87</sub>	"5x
'13x	X <sub>88</sub>	Y <sub>89</sub>	Z <sub>90</sub>	<sub>91</sub>	<sub>92</sub>	<sub>93</sub>	<sub>94</sub>	<sub>95</sub>	
'14x	<sub>96</sub>	a <sub>97</sub>	b <sub>98</sub>	c <sub>99</sub>	d <sub>100</sub>	e <sub>101</sub>	f <sub>102</sub>	g <sub>103</sub>	"6x
'15x	h <sub>104</sub>	i <sub>105</sub>	j <sub>106</sub>	k <sub>107</sub>	l <sub>108</sub>	m <sub>109</sub>	n <sub>110</sub>	o <sub>111</sub>	
'16x	p <sub>112</sub>	q <sub>113</sub>	r <sub>114</sub>	s <sub>115</sub>	t <sub>116</sub>	u <sub>117</sub>	v <sub>118</sub>	w <sub>119</sub>	"7x
'17x	x <sub>120</sub>	y <sub>121</sub>	z <sub>122</sub>	l <sub>123</sub>	j <sub>124</sub>	<sub>125</sub>	<sub>126</sub>	<sub>127</sub>	
	"8	"9	"A	"B	"C	"D	"E	"F	

#### NEW SANS SERIF ALPHABETS:

With the new additions to `libertinust1math`, starting with version 1.1, there are substantial changes to the handling of sans serif. The changes have the following goals.

- Provide a math package with which all ISO typesetting rules may be followed.
- Simultaneously, add options for the non-ISO user to be able to make better use of sans serif math symbols.
- Provide the option of sans serif Roman and Greek math letters together with math symbols from `libertinust1math`, which may be useful to those who like to make their slides using sans serif for enhanced readability at lower resolutions.

Thanks go to Claudio Beccari for convincing me that the effort involved was worthwhile, at least for the ISO case.

Four fonts parallel to the serifed roman and italic (regular and bold) have been added, with sans serif alphanumeric symbols based on those in STIX, but slightly reduced in size and the italics reworked to match the italic slant of `libertine`. (Aside from `Biolinum Roman`, the `Biolinum` fonts are not, in my opinion, suitable for use as sans math to accompany `libertinust1math`.) Glyphs in the four fonts may be accessed by the macros `\mathsf`, `\mathsfbf`, `\mathsfit` and `\mathsfbfit`, though not all of these may be defined, depending on the options you set.

#### NEW PACKAGE OPTIONS AND MACROS:

I've followed to some extent the options and macros in the `isomath` package.

- `nosans` provides the bare minimum access to sans serif math letters, preserving just `\mathsf` and its bold counterpart, `\mathsfbf`. This option keeps the use of additional math families to a minimum. (If you make no use of those macros, no new math families are created.) If `nosans` is not specified, new symbol fonts `sans` and `sansi` are declared, along with bold versions, and `\mathsfbfit` is declared to be the bold italic sans math alphabet. Two of the available sixteen math families will be committed.
- Option `lcgreekalpha` allows proper handling of alphabet changes for lower-case Greek letters. (They are `mathord` by default—this option changes them to `mathalpha`, so that you do in fact get the expected sans Greek when you enter `\mathsf{\phi}`.)
- ISO specifies changes needed to conform to ISO typesetting rules. If specified, the following changes will occur.
  - Option `nosans` is turned off, if present, and option `mathsfit` is ignored unless the additional option `mathsfit` is specified.
  - Option `lcgreekalpha` is turned on, allowing proper handling of alphabet changes for lower-case Greek letters.
  - Option `slantedGreek` is turned on, as required by ISO rules.
  - New commands are provided: `\mathboldsans` means `\mathsfbfit`, and `\mathbold` means `\mathbf`, while each of `\vectorsym`, `\matrixsym` means `\mathbf`, and `\tensorsym` means `\mathsfbfit`. For example, `\matrixsym{A}` renders as `A`, in accordance with ISO rules.
  - If you add the option `mathsfit`, then you also have access to sans italic math, which ISO regards as an option for some special cases. This will use another math family.
  - The option `reuseMathAlphabets` may be added, and can reduce math family usage by redefining `\mathbf` to mean `\mathsfbf` (math bold italic) and `\mathsf` to mean `\mathsfbf` (sans math bold italic.)
  - As it may be important to keep track of your math families when using ISO, I've added `\ShowMathFamilies`. If you get an error message “too many math alphabets used in version normal”, run the macro just before the error location to get an idea of its cause.
- `mathsfit` may be used without ISO, and the same effect described under the ISO heading.
- `reuseMathAlphabets` may be used without ISO, but really makes sense only under ISO.

- `sansmath` sets `nosans` and substitutes sans letters (Roman and Greek) in place of the default Libertine letters. With this option, every math expression in the document will be rendered using sans serif letters.

libertinust1-mathsfrm (\mathsf)

	'o	'1	'2	'3	'4	'5	'6	'7	
'oox	$\Gamma_0$	$\Delta_1$	$\Theta_2$	$\Lambda_3$	$\Xi_4$	$\Pi_5$	$\Sigma_6$	$\Upsilon_7$	"0x
'o1x	$\Phi_8$	$\Psi_9$	$\Omega_{10}$	$\alpha_{11}$	$\beta_{12}$	$\gamma_{13}$	$\delta_{14}$	$\epsilon_{15}$	"1x
'o2x	$\zeta_{16}$	$\eta_{17}$	$\theta_{18}$	$\iota_{19}$	$\kappa_{20}$	$\lambda_{21}$	$\mu_{22}$	$\nu_{23}$	"2x
'o3x	$\xi_{24}$	$\pi_{25}$	$\rho_{26}$	$\sigma_{27}$	$\tau_{28}$	$\upsilon_{29}$	$\phi_{30}$	$\chi_{31}$	"3x
'o4x	$\psi_{32}$	$\omega_{33}$	$\varepsilon_{34}$	$\vartheta_{35}$	$\varpi_{36}$	$\varrho_{37}$	$\varsigma_{38}$	$\varphi_{39}$	"4x
'o5x	$\nabla_{40}$	$\partial_{41}$	$-_{42}$	$+_ {43}$	$\pm_{44}$	$\mp_{45}$	$(_{46}$	$)_{47}$	"5x
'o6x	$0_{48}$	$1_{49}$	$2_{50}$	$3_{51}$	$4_{52}$	$5_{53}$	$6_{54}$	$7_{55}$	"6x
'o7x	$8_{56}$	$9_{57}$	$\vdots_{58}$	$\ddot{\cdot}_{59}$	$\star_{60}$	$=_{61}$	$\$_{62}$	$?_{63}$	"7x
'o10x	$!_{64}$	$A_{65}$	$B_{66}$	$C_{67}$	$D_{68}$	$E_{69}$	$F_{70}$	$G_{71}$	"8x
'o11x	$H_{72}$	$I_{73}$	$J_{74}$	$K_{75}$	$L_{76}$	$M_{77}$	$N_{78}$	$O_{79}$	"9x
'o12x	$P_{80}$	$Q_{81}$	$R_{82}$	$S_{83}$	$T_{84}$	$U_{85}$	$V_{86}$	$W_{87}$	"Ax
'o13x	$X_{88}$	$Y_{89}$	$Z_{90}$	$[_{91}$	$\backslash_{92}$	$]_{93}$	$\{_{94}$	$/_{95}$	"Bx
'o14x	$\} _{96}$	$a_{97}$	$b_{98}$	$c_{99}$	$d_{100}$	$e_{101}$	$f_{102}$	$g_{103}$	"Cx
'o15x	$h_{104}$	$i_{105}$	$j_{106}$	$k_{107}$	$l_{108}$	$m_{109}$	$n_{110}$	$o_{111}$	"Dx
'o16x	$p_{112}$	$q_{113}$	$r_{114}$	$s_{115}$	$t_{116}$	$u_{117}$	$v_{118}$	$w_{119}$	"Ex
'o17x	$x_{120}$	$y_{121}$	$z_{122}$	$l_{123}$	$j_{124}$	$\#_{125}$	$\%_{126}$	$,$	"Fx
'o20x	$`_{128}$	$'_{129}$	$^{\wedge}_{130}$	$\sim_{131}$	$\neg_{132}$	$\curlyvee_{133}$	$\cdot_{134}$	$\cdots_{135}$	"Ax
'o21x	$^{\circ}_{136}$	$^{\circ}_{137}$	$^{\vee}_{138}$	$^{\diamond}_{139}$	$^{\circ}_{140}$	$^{\prime}_{141}$	$^{\gamma}_{142}$	$^{\leftarrow}_{143}$	"Bx
'o22x	$\rightarrow_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$\cdots_{147}$	$\cdots_{148}$	$\leftrightarrow_{149}$	$\overline{\downarrow}_{150}$	$\overline{\uparrow}_{151}$	"Cx
'o23x	$^{*}_{152}$	$\&_{153}$	$\oplus_{154}$	$\neg_{155}$	$\cdot_{156}$	$\times_{157}$	$\leq_{158}$	$\div_{159}$	"Dx
'o24x	$Z_{160}$	$\not\perp_{61}$	$\exists_{162}$	$\dagger_{163}$	$\dagger_{164}$	$\bullet_{165}$	$\ldots_{166}$	$\ldots_{167}$	"Ex
'o25x	$\not\parallel_{168}$	$\not\parallel_{169}$	$\not\parallel_{170}$	$\forall_{171}$	$\forall_{172}$	$\forall_{173}$	$\wedge^{174}$	$\parallel_{175}$	"Fx
'o26x	$\blacksquare_{176}$	$\swarrow_{177}$	$\swarrow_{178}$	$\uparrow_{179}$	$\uparrow_{180}$	$\downarrow_{181}$	$\uparrow_{182}$	$\uparrow_{183}$	"Ax
'o27x	$\asymp_{184}$	$\asymp_{185}$	$\asymp_{186}$	$\asymp_{187}$	$\asymp_{188}$	$\asymp_{189}$	$\asymp_{190}$	$\asymp_{191}$	"Bx
'o30x	$\top_{192}$	$\bot_{193}$	$\lambda_{194}$	$\nu_{195}$	$\wp_{196}$	$\forall_{197}$	$\mathbb{C}_{198}$	$\exists_{199}$	"Cx
'o31x	$\exists_{200}$	$\emptyset_{201}$	$\Delta_{202}$	$\epsilon_{203}$	$\notin_{204}$	$\epsilon_{205}$	$\exists_{206}$	$\not\exists_{207}$	"Dx
'o32x	$\exists_{208}$	$\blacksquare_{209}$	$\dot{+}_{210}$	$\geq_{211}$	$\swarrow_{212}$	$\circ_{213}$	$\bullet_{214}$	$\infty_{215}$	"Ex
'o33x	$\infty_{216}$	$\sqsubset_{217}$	$\angle_{218}$	$\not\angle_{219}$	$\not\angle_{220}$	$\mid_{221}$	$\not\mid_{222}$	$\parallel_{223}$	"Fx
'o34x	$\parallel_{224}$	$\wedge_{225}$	$\vee_{226}$	$\cap_{227}$	$\cup_{228}$	$\cup_{229}$	$\cup_{230}$	$\emptyset_{231}$	"Ax
'o35x	$\bowtie_{232}$	$\dashv_{233}$	$\dashv_{234}$	$\bowtie_{235}$	$\bowtie_{236}$	$\sim_{237}$	$\sim_{238}$	$\bowtie_{239}$	"Bx
'o36x	$\sim_{240}$	$\approx_{241}$	$\not\approx_{242}$	$\approx_{243}$	$\approx_{244}$	$\not\approx_{245}$	$\approx_{246}$	$\not\approx_{247}$	"Cx
'o37x	$\not\approx_{248}$	$\approx_{249}$	$\not\approx_{250}$	$\approx_{251}$	$\approx_{252}$	$\approx_{253}$	$\not\approx_{254}$	$\approx_{255}$	"Dx
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathsfrm-bold (\mathsf{bf})

	$\mathbf{o}$	$\mathbf{1}$	$\mathbf{2}$	$\mathbf{3}$	$\mathbf{4}$	$\mathbf{5}$	$\mathbf{6}$	$\mathbf{7}$	
$\mathbf{\Gamma}_0$	$\mathbf{\Delta}_1$	$\mathbf{\Theta}_2$	$\mathbf{\Lambda}_3$	$\mathbf{\Xi}_4$	$\mathbf{\Pi}_5$	$\mathbf{\Sigma}_6$	$\mathbf{\Upsilon}_7$		"0x
$\mathbf{\Phi}_8$	$\mathbf{\Psi}_9$	$\mathbf{\Omega}_{10}$	$\mathbf{\alpha}_{11}$	$\mathbf{\beta}_{12}$	$\mathbf{\gamma}_{13}$	$\mathbf{\delta}_{14}$	$\mathbf{\epsilon}_{15}$		
$\mathbf{\zeta}_{16}$	$\mathbf{\eta}_{17}$	$\mathbf{\theta}_{18}$	$\mathbf{\iota}_{19}$	$\mathbf{\kappa}_{20}$	$\mathbf{\lambda}_{21}$	$\mathbf{\mu}_{22}$	$\mathbf{\nu}_{23}$		"1x
$\mathbf{\xi}_{24}$	$\mathbf{\pi}_{25}$	$\mathbf{\rho}_{26}$	$\mathbf{\sigma}_{27}$	$\mathbf{\tau}_{28}$	$\mathbf{\upsilon}_{29}$	$\mathbf{\phi}_{30}$	$\mathbf{\chi}_{31}$		
$\mathbf{\psi}_{32}$	$\mathbf{\omega}_{33}$	$\mathbf{\varepsilon}_{34}$	$\mathbf{\vartheta}_{35}$	$\mathbf{\varpi}_{36}$	$\mathbf{\varrho}_{37}$	$\mathbf{\varsigma}_{38}$	$\mathbf{\varphi}_{39}$		"2x
$\mathbf{\nabla}_{40}$	$\mathbf{\partial}_{41}$	$-_{42}$	$+_ {43}$	$\pm_{44}$	$\mp_{45}$	$(_{46}$	$)_{47}$		
$\mathbf{0}_{48}$	$\mathbf{1}_{49}$	$\mathbf{2}_{50}$	$\mathbf{3}_{51}$	$\mathbf{4}_{52}$	$\mathbf{5}_{53}$	$\mathbf{6}_{54}$	$\mathbf{7}_{55}$		"3x
$\mathbf{8}_{56}$	$\mathbf{9}_{57}$	$\mathbf{:}_{58}$	$\mathbf{;}_{59}$	$\mathbf{*}_{60}$	$\mathbf{=}_{61}$	$\mathbf{\$}_{62}$	$\mathbf{?}_{63}$		
$\mathbf{!}_{64}$	$\mathbf{A}_{65}$	$\mathbf{B}_{66}$	$\mathbf{C}_{67}$	$\mathbf{D}_{68}$	$\mathbf{E}_{69}$	$\mathbf{F}_{70}$	$\mathbf{G}_{71}$		"4x
$\mathbf{H}_{72}$	$\mathbf{I}_{73}$	$\mathbf{J}_{74}$	$\mathbf{K}_{75}$	$\mathbf{L}_{76}$	$\mathbf{M}_{77}$	$\mathbf{N}_{78}$	$\mathbf{O}_{79}$		
$\mathbf{P}_{80}$	$\mathbf{Q}_{81}$	$\mathbf{R}_{82}$	$\mathbf{S}_{83}$	$\mathbf{T}_{84}$	$\mathbf{U}_{85}$	$\mathbf{V}_{86}$	$\mathbf{W}_{87}$		"5x
$\mathbf{X}_{88}$	$\mathbf{Y}_{89}$	$\mathbf{Z}_{90}$	$[_{91}$	$\backslash_{92}$	$]_{93}$	$\{_{94}$	$/_{95}$		
$\mathbf{\} }_{96}$	$\mathbf{a}_{97}$	$\mathbf{b}_{98}$	$\mathbf{c}_{99}$	$\mathbf{d}_{100}$	$\mathbf{e}_{101}$	$\mathbf{f}_{102}$	$\mathbf{g}_{103}$		"6x
$\mathbf{h}_{104}$	$\mathbf{i}_{105}$	$\mathbf{j}_{106}$	$\mathbf{k}_{107}$	$\mathbf{l}_{108}$	$\mathbf{m}_{109}$	$\mathbf{n}_{110}$	$\mathbf{o}_{111}$		
$\mathbf{p}_{112}$	$\mathbf{q}_{113}$	$\mathbf{r}_{114}$	$\mathbf{s}_{115}$	$\mathbf{t}_{116}$	$\mathbf{u}_{117}$	$\mathbf{v}_{118}$	$\mathbf{w}_{119}$		"7x
$\mathbf{x}_{120}$	$\mathbf{y}_{121}$	$\mathbf{z}_{122}$	$\mathbf{l}_{123}$	$\mathbf{j}_{124}$	$\#_{125}$	$\%_{126}$	$,$		
$\mathbf{`}_{128}$	$\mathbf{'}_{129}$	$\mathbf{^}_{130}$	$\mathbf{\sim}_{131}$	$\mathbf{-}_{132}$	$\mathbf{\curlyvee}_{133}$	$\mathbf{.}_{134}$	$\mathbf{..}_{135}$		"8x
$\mathbf{`}_{136}$	$\mathbf{^}_{137}$	$\mathbf{\circ}_{138}$	$\mathbf{\triangleleft}_{139}$	$\mathbf{\triangleup}_{140}$	$\mathbf{\triangleright}_{141}$	$\mathbf{\lrcorner}_{142}$	$\mathbf{\lrcorner}_{143}$		
$\mathbf{\neg}_{144}$	$\mathbf{\leftarrow}_{145}$	$\mathbf{\rightarrow}_{146}$	$\mathbf{...}_{147}$	$\mathbf{....}_{148}$	$\mathbf{\leftrightarrow}_{149}$	$\mathbf{\lceil}_{150}$	$\mathbf{\rceil}_{151}$		"9x
$\mathbf{*}_{152}$	$\mathbf{\&}_{153}$	$\mathbf{\circledast}_{154}$	$\mathbf{\neg}_{155}$	$\mathbf{\cdot}_{156}$	$\mathbf{\times}_{157}$	$\mathbf{\leq}_{158}$	$\mathbf{\div}_{159}$		
$\mathbf{Z}_{160}$	$\mathbf{\not\!}_{161}$	$\mathbf{\exists}_{162}$	$\mathbf{\dag}_{163}$	$\mathbf{\ddag}_{164}$	$\mathbf{\bullet}_{165}$	$\mathbf{..}_{166}$	$\mathbf{...}_{167}$		"Ax
$\mathbf{/}_{168}$	$\mathbf//_{169}$	$\mathbf///_{170}$	$\mathbf{\setminus}_{171}$	$\mathbf{\setminus\!\setminus}_{172}$	$\mathbf{\setminus\!\setminus\!\setminus}_{173}$	$\mathbf{\wedge}_{174}$	$\mathbf{\parallel}_{175}$		
$\mathbf{\negexists}_{176}$	$\mathbf{/}_{177}$	$\mathbf{??}_{178}$	$\mathbf{179}$	$\mathbf{!!!!}_{180}$	$\mathbf{\vdash}_{181}$	$\mathbf{182}$	$\mathbf{183}$		"Bx
$\mathbf{\asymp}_{184}$	$\mathbf{185}$	$\mathbf{\mathcal{E}}_{186}$	$\mathbf{\mathfrak{D}}_{187}$	$\mathbf{188}$	$\mathbf{\mathring{A}}_{189}$	$\mathbf{\mathfrak{A}}_{190}$	$\mathbf{\mathfrak{D}}_{191}$		
$\mathbf{\asymp}_{192}$	$\mathbf{\mathbb{L}}_{193}$	$\mathbf{\lambda}_{194}$	$\mathbf{195}$	$\mathbf{\mathfrak{B}}_{196}$	$\mathbf{\mathfrak{A}}_{197}$	$\mathbf{\mathfrak{C}}_{198}$	$\mathbf{\mathfrak{E}}_{199}$		"Cx
$\mathbf{\mathbb{Z}}_{200}$	$\mathbf{\emptyset}_{201}$	$\mathbf{\Delta}_{202}$	$\mathbf{\mathbb{E}}_{203}$	$\mathbf{\mathfrak{E}}_{204}$	$\mathbf{\epsilon}_{205}$	$\mathbf{\mathfrak{E}}_{206}$	$\mathbf{\mathfrak{D}}_{207}$		
$\mathbf{\mathfrak{B}}_{208}$	$\mathbf{\blacksquare}_{209}$	$\mathbf{\dot+}_{210}$	$\mathbf{\geq}_{211}$	$\mathbf{\backslash}_{212}$	$\mathbf{\circ}_{213}$	$\mathbf{\bullet}_{214}$	$\mathbf{\alpha}_{215}$		"Dx
$\mathbf{\infty}_{216}$	$\mathbf{\mathbb{L}}_{217}$	$\mathbf{\angle}_{218}$	$\mathbf{\not\angle}_{219}$	$\mathbf{\not\mathbb{A}}_{220}$	$\mathbf{ }_{221}$	$\mathbf{\not }_{222}$	$\mathbf{\parallel}_{223}$		
$\mathbf{\parallel}_{224}$	$\mathbf{\wedge}_{225}$	$\mathbf{\vee}_{226}$	$\mathbf{\cap}_{227}$	$\mathbf{\cup}_{228}$	$\mathbf{\dots}_{229}$	$\mathbf{\dots}_{230}$	$\mathbf{\emptyset}_{231}$		"Ex
$\mathbf{\cdots}_{232}$	$\mathbf{\dot+}_{233}$	$\mathbf{\dot-}_{234}$	$\mathbf{\dot\wedge}_{235}$	$\mathbf{\dot\wedge}_{236}$	$\mathbf{\sim}_{237}$	$\mathbf{\sim}_{238}$	$\mathbf{\infty}_{239}$		
$\mathbf{\approx}_{240}$	$\mathbf{\sim}_{241}$	$\mathbf{\not\approx}_{242}$	$\mathbf{\approx}_{243}$	$\mathbf{\simeq}_{244}$	$\mathbf{\not\simeq}_{245}$	$\mathbf{\cong}_{246}$	$\mathbf{\not\cong}_{247}$		"Fx
$\mathbf{\not\equiv}_{248}$	$\mathbf{\approx}_{249}$	$\mathbf{\not\approx}_{250}$	$\mathbf{\approx}_{251}$	$\mathbf{\approx}_{252}$	$\mathbf{\approx}_{253}$	$\mathbf{\not\approx}_{254}$	$\mathbf{\approx}_{255}$		
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathsfit (\mathsf{mathsf{fit}})

	$\acute{o}$	$\acute{1}$	$\acute{2}$	$\acute{3}$	$\acute{4}$	$\acute{5}$	$\acute{6}$	$\acute{7}$	
$\acute{o}ox$	$\Gamma_0$	$\Delta_1$	$\Theta_2$	$\Lambda_3$	$\Xi_4$	$\Pi_5$	$\Sigma_6$	$\Upsilon_7$	"0x
$\acute{o}1x$	$\Phi_8$	$\Psi_9$	$\Omega_{10}$	$\alpha_{11}$	$\beta_{12}$	$\gamma_{13}$	$\delta_{14}$	$\epsilon_{15}$	
$\acute{o}2x$	$\zeta_{16}$	$\eta_{17}$	$\theta_{18}$	$\iota_{19}$	$\kappa_{20}$	$\lambda_{21}$	$\mu_{22}$	$\nu_{23}$	"1x
$\acute{o}3x$	$\xi_{24}$	$\pi_{25}$	$\rho_{26}$	$\sigma_{27}$	$\tau_{28}$	$\upsilon_{29}$	$\phi_{30}$	$\chi_{31}$	
$\acute{o}4x$	$\psi_{32}$	$\omega_{33}$	$\varepsilon_{34}$	$\vartheta_{35}$	$\varpi_{36}$	$\varrho_{37}$	$\varsigma_{38}$	$\varphi_{39}$	"2x
$\acute{o}5x$	$\nabla_{40}$	$\partial_{41}$	$\aleph_{42}$	$\beth_{43}$	$\lambda_{44}$	$\daleth_{45}$	$\triangleright_{46}$	$\triangleleft_{47}$	
$\acute{o}6x$	$0_{48}$	$1_{49}$	$2_{50}$	$3_{51}$	$4_{52}$	$5_{53}$	$6_{54}$	$7_{55}$	"3x
$\acute{o}7x$	$8_{56}$	$9_{57}$	$.58$	$,59$	$<_{60}$	$\hbar_{61}$	$>_{62}$	$\star_{63}$	
$\acute{o}10x$	$\lessapprox_{64}$	$A_{65}$	$B_{66}$	$C_{67}$	$D_{68}$	$E_{69}$	$F_{70}$	$G_{71}$	"4x
$\acute{o}11x$	$H_{72}$	$I_{73}$	$J_{74}$	$K_{75}$	$L_{76}$	$M_{77}$	$N_{78}$	$O_{79}$	
$\acute{o}12x$	$P_{80}$	$Q_{81}$	$R_{82}$	$S_{83}$	$T_{84}$	$U_{85}$	$V_{86}$	$W_{87}$	"5x
$\acute{o}13x$	$X_{88}$	$Y_{89}$	$Z_{90}$	$\flat_{91}$	$\natural_{92}$	$\sharp_{93}$	$\smile_{94}$	$\frown_{95}$	
$\acute{o}14x$	$\hbar_{96}$	$a_{97}$	$b_{98}$	$c_{99}$	$d_{100}$	$e_{101}$	$f_{102}$	$g_{103}$	"6x
$\acute{o}15x$	$h_{104}$	$i_{105}$	$j_{106}$	$k_{107}$	$l_{108}$	$m_{109}$	$n_{110}$	$o_{111}$	
$\acute{o}16x$	$p_{112}$	$q_{113}$	$r_{114}$	$s_{115}$	$t_{116}$	$u_{117}$	$v_{118}$	$w_{119}$	"7x
$\acute{o}17x$	$X_{120}$	$y_{121}$	$Z_{122}$	$I_{123}$	$J_{124}$	$\gtrless_{125}$	$\ll_{126}$	$\overbrace{\phantom{x}}_{127}$	
$\acute{o}20x$	$\grave{1}_{128}$	$\acute{1}_{129}$	$\hat{1}_{130}$	$\sim_{131}$	$\bar{1}_{132}$	$\curlyvee_{133}$	$\dot{1}_{134}$	$\ddot{1}_{135}$	"8x
$\acute{o}21x$	$\grave{2}_{136}$	$\acute{2}_{137}$	$\hat{2}_{138}$	$\sim_{139}$	$\dot{2}_{140}$	$\acute{2}_{141}$	$\grave{2}_{142}$	$\ddot{2}_{143}$	
$\acute{o}22x$	$\grave{3}_{144}$	$\acute{3}_{145}$	$\hat{3}_{146}$	$\sim_{147}$	$\cdots_{148}$	$\leftrightarrow_{149}$	$\overbrace{\phantom{x}}_{150}$	$\overbrace{\phantom{x}}_{151}$	"9x
$\acute{o}23x$	$\grave{4}_{152}$	$\acute{4}_{153}$	$\hat{4}_{154}$	$\sim_{155}$	$\dot{4}_{156}$	$\grave{4}_{157}$	$\sim_{158}$	$\curlyvee_{159}$	
$\acute{o}24x$	$\grave{5}_{160}$	$\acute{5}_{161}$	$\hat{5}_{162}$	$\sim_{163}$	$\cdots_{164}$	$\overbrace{\phantom{x}}_{165}$	$\overbrace{\phantom{x}}_{166}$	$\overbrace{\phantom{x}}_{167}$	"Ax
$\acute{o}25x$	$\grave{6}_{168}$	$\acute{6}_{169}$	$\hat{6}_{170}$	$\sim_{171}$	$\dot{6}_{172}$	$\grave{6}_{173}$	$\sim_{174}$	$\curlyvee_{175}$	
$\acute{o}26x$	$\grave{7}_{176}$	$\acute{7}_{177}$	$\hat{7}_{178}$	$\sim_{179}$	$\dot{7}_{180}$	$\grave{7}_{181}$	$\sim_{182}$	$\curlyvee_{183}$	"Bx
$\acute{o}27x$	$\gg_{184}$	$\flat_{185}$	$\ast_{186}$	$\not\ast_{187}$	$\not\ast_{188}$	$\not\ast_{189}$	$\not\ast_{190}$	$\lesssim_{191}$	
$\acute{o}30x$	$\gtrsim_{192}$	$\not\gtrsim_{193}$	$\not\gtrsim_{194}$	$\lessgtr_{195}$	$\gtrless_{196}$	$\not\gtrless_{197}$	$\not\gtrless_{198}$	$\prec_{199}$	"Cx
$\acute{o}31x$	$\succ_{200}$	$\preccurlyeq_{201}$	$\gtrless_{202}$	$\lessgtr_{203}$	$\gtrless_{204}$	$\not\gtrless_{205}$	$\not\gtrless_{206}$	$\subset_{207}$	
$\acute{o}32x$	$\supset_{208}$	$\not\supset_{209}$	$\not\supset_{210}$	$\subseteq_{211}$	$\supseteq_{212}$	$\not\subseteq_{213}$	$\not\supseteq_{214}$	$\subseteq_{215}$	"Dx
$\acute{o}33x$	$\supseteq_{216}$	$\not\supseteq_{217}$	$\not\supseteq_{218}$	$\not\supseteq_{219}$	$\sqsubseteq_{220}$	$\supseteq_{221}$	$\sqsubseteq_{222}$	$\supseteq_{223}$	
$\acute{o}34x$	$\sqcap_{224}$	$\sqcup_{225}$	$\oplus_{226}$	$\ominus_{227}$	$\otimes_{228}$	$\oslash_{229}$	$\odot_{230}$	$\odot_{231}$	"Ex
$\acute{o}35x$	$\circledcirc_{232}$	$\circledast_{233}$	$\ominus_{234}$	$\boxplus_{235}$	$\boxminus_{236}$	$\boxtimes_{237}$	$\boxdot_{238}$	$\vdash_{239}$	
$\acute{o}36x$	$\dashv_{240}$	$\top_{241}$	$\perp_{242}$	$\vdash_{243}$	$\models_{244}$	$\models_{245}$	$\Vdash_{246}$	$\Vdash_{247}$	"Fx
$\acute{o}37x$	$\Vdash_{248}$	$\not\Vdash_{249}$	$\not\Vdash_{250}$	$\not\Vdash_{251}$	$\not\Vdash_{252}$	$\models_{253}$	$\times_{254}$	$\boxdot_{255}$	
	"8	"9	"A	"B	"C	"D	"E	"F	

libertinust1-mathsfit-bold (\mathsf{bf})

	$\mathbf{o}$	$\mathbf{1}$	$\mathbf{2}$	$\mathbf{3}$	$\mathbf{4}$	$\mathbf{5}$	$\mathbf{6}$	$\mathbf{7}$	
$\mathbf{o}_{0x}$	$\Gamma_0$	$\Delta_1$	$\Theta_2$	$\Lambda_3$	$\Xi_4$	$\Pi_5$	$\Sigma_6$	$\Upsilon_7$	$"0x$
$\mathbf{o}_{01x}$	$\Phi_8$	$\Psi_9$	$\Omega_{10}$	$\alpha_{11}$	$\beta_{12}$	$\gamma_{13}$	$\delta_{14}$	$\epsilon_{15}$	
$\mathbf{o}_{02x}$	$\zeta_{16}$	$\eta_{17}$	$\theta_{18}$	$\iota_{19}$	$\kappa_{20}$	$\lambda_{21}$	$\mu_{22}$	$\nu_{23}$	$"1x$
$\mathbf{o}_{03x}$	$\xi_{24}$	$\pi_{25}$	$\rho_{26}$	$\sigma_{27}$	$\tau_{28}$	$\upsilon_{29}$	$\phi_{30}$	$\chi_{31}$	
$\mathbf{o}_{04x}$	$\psi_{32}$	$\omega_{33}$	$\epsilon_{34}$	$\vartheta_{35}$	$\varpi_{36}$	$\varrho_{37}$	$\varsigma_{38}$	$\varphi_{39}$	$"2x$
$\mathbf{o}_{05x}$	$\nabla_{40}$	$\partial_{41}$	$\aleph_{42}$	$\beth_{43}$	$\lambda_{44}$	$\daleth_{45}$	$\triangleright_{46}$	$\triangleleft_{47}$	
$\mathbf{o}_{06x}$	$\mathbf{0}_{48}$	$\mathbf{1}_{49}$	$\mathbf{2}_{50}$	$\mathbf{3}_{51}$	$\mathbf{4}_{52}$	$\mathbf{5}_{53}$	$\mathbf{6}_{54}$	$\mathbf{7}_{55}$	$"3x$
$\mathbf{o}_{07x}$	$\mathbf{8}_{56}$	$\mathbf{9}_{57}$	$.58$	$.59$	$<_{60}$	$\hbar_{61}$	$>_{62}$	$\star_{63}$	
$\mathbf{o}_{10x}$	$\mathbf{A}_{65}$	$\mathbf{B}_{66}$	$\mathbf{C}_{67}$	$\mathbf{D}_{68}$	$\mathbf{E}_{69}$	$\mathbf{F}_{70}$	$\mathbf{G}_{71}$		$"4x$
$\mathbf{o}_{11x}$	$\mathbf{H}_{72}$	$\mathbf{I}_{73}$	$\mathbf{J}_{74}$	$\mathbf{K}_{75}$	$\mathbf{L}_{76}$	$\mathbf{M}_{77}$	$\mathbf{N}_{78}$	$\mathbf{O}_{79}$	
$\mathbf{o}_{12x}$	$\mathbf{P}_{80}$	$\mathbf{Q}_{81}$	$\mathbf{R}_{82}$	$\mathbf{S}_{83}$	$\mathbf{T}_{84}$	$\mathbf{U}_{85}$	$\mathbf{V}_{86}$	$\mathbf{W}_{87}$	$"5x$
$\mathbf{o}_{13x}$	$\mathbf{X}_{88}$	$\mathbf{Y}_{89}$	$\mathbf{Z}_{90}$	$\mathbf{b}_{91}$	$\mathbf{h}_{92}$	$\mathbf{\#}_{93}$	$\mathbf{\sim}_{94}$	$\mathbf{\frown}_{95}$	
$\mathbf{o}_{14x}$	$\mathbf{h}_{96}$	$\mathbf{a}_{97}$	$\mathbf{b}_{98}$	$\mathbf{c}_{99}$	$\mathbf{d}_{100}$	$\mathbf{e}_{101}$	$\mathbf{f}_{102}$	$\mathbf{g}_{103}$	$"6x$
$\mathbf{o}_{15x}$	$\mathbf{h}_{104}$	$\mathbf{i}_{105}$	$\mathbf{j}_{106}$	$\mathbf{k}_{107}$	$\mathbf{l}_{108}$	$\mathbf{m}_{109}$	$\mathbf{n}_{110}$	$\mathbf{o}_{111}$	
$\mathbf{o}_{16x}$	$\mathbf{p}_{112}$	$\mathbf{q}_{113}$	$\mathbf{r}_{114}$	$\mathbf{s}_{115}$	$\mathbf{t}_{116}$	$\mathbf{u}_{117}$	$\mathbf{v}_{118}$	$\mathbf{w}_{119}$	$"7x$
$\mathbf{o}_{17x}$	$\mathbf{x}_{120}$	$\mathbf{y}_{121}$	$\mathbf{z}_{122}$	$\mathbf{l}_{123}$	$\mathbf{J}_{124}$	$\mathbf{\geq}_{125}$	$\mathbf{\ll}_{126}$	$\mathbf{\smile}_{127}$	
$\mathbf{o}_{20x}$	${}^_{128}$	${}^_{129}$	${}^_{130}$	${}^_{131}$	${}^{-}_{132}$	${}^{\vee}_{133}$	${}^{\cdot}_{134}$	${}^{..}_{135}$	$"8x$
$\mathbf{o}_{21x}$	${}^?_{136}$	${}^?_{137}$	${}^?_{138}$	${}^?_{139}$	${}^?_{140}$	${}^?_{141}$	${}^?_{142}$	${}^?_{143}$	
$\mathbf{o}_{22x}$	$\rightarrow_{144}$	$\leftarrow_{145}$	$\rightarrow_{146}$	$\cdots_{147}$	$\cdots_{148}$	$\leftrightarrow_{149}$	$\overline{\parallel}_{50}$	$\overline{\sqcap}_{151}$	$"9x$
$\mathbf{o}_{23x}$	$*_{152}$	$-_{153}$	$\wedge_{154}$	$\sim_{155}$	$\vee_{156}$	$\wedge_{157}$	$\sim_{158}$	$\sim_{159}$	
$\mathbf{o}_{24x}$	$\overbrace{_{160}}$	$\overbrace{_{161}}$	$\overbrace{_{162}}$	$\overbrace{_{163}}$	$\overbrace{_{164}}$	$\overbrace{_{165}}$	$\overbrace{_{166}}$	$\overbrace{_{167}}$	$"Ax$
$\mathbf{o}_{25x}$	$\overbrace{_{168}}$	$\overbrace{_{169}}$	$\overbrace{_{170}}$	$\overbrace{_{171}}$	$\overbrace{_{172}}$	$\overbrace{_{173}}$	$\overbrace{_{174}}$	$\overbrace{_{175}}$	
$\mathbf{o}_{26x}$	$\overbrace{_{176}}$	$\overbrace{_{177}}$	$\overbrace{_{178}}$	$\overbrace{_{179}}$	$\overbrace{_{180}}$	$\overbrace{_{181}}$	$\overbrace{_{182}}$	$\overbrace{_{183}}$	$"Bx$
$\mathbf{o}_{27x}$	$\gg_{184}$	$\flat_{185}$	$\not\ast_{186}$	$\not\ast_{187}$	$\not\ast_{188}$	$\not\ast_{189}$	$\not\ast_{190}$	$\lesssim_{191}$	
$\mathbf{o}_{30x}$	$\gtrsim_{192}$	$\not\ast_{193}$	$\not\ast_{194}$	$\lessgtr_{195}$	$\gtrless_{196}$	$\not\ast_{197}$	$\not\ast_{198}$	$\prec_{199}$	$"Cx$
$\mathbf{o}_{31x}$	$\succ_{200}$	$\preccurlyeq_{201}$	$\gtrless_{202}$	$\lessgtr_{203}$	$\gtrless_{204}$	$\not\ast_{205}$	$\not\ast_{206}$	$\subset_{207}$	
$\mathbf{o}_{32x}$	$\supset_{208}$	$\not\subset_{209}$	$\not\supset_{210}$	$\subseteq_{211}$	$\supseteq_{212}$	$\not\subseteq_{213}$	$\not\supseteq_{214}$	$\subseteq_{215}$	$"Dx$
$\mathbf{o}_{33x}$	$\not\supset_{216}$	$\not\subseteq_{217}$	$\not\supseteq_{218}$	$\not\subseteq_{219}$	$\supseteq_{220}$	$\supseteq_{221}$	$\subseteq_{222}$	$\supseteq_{223}$	
$\mathbf{o}_{34x}$	$\sqcup_{224}$	$\sqcup_{225}$	$\oplus_{226}$	$\Theta_{227}$	$\otimes_{228}$	$\oslash_{229}$	$\odot_{230}$	$\odot_{231}$	$"Ex$
$\mathbf{o}_{35x}$	$\oplus_{232}$	$\ominus_{233}$	$\Theta_{234}$	$\boxplus_{235}$	$\boxminus_{236}$	$\boxtimes_{237}$	$\boxdot_{238}$	$\vdash_{239}$	
$\mathbf{o}_{36x}$	$\dashv_{240}$	$\top_{241}$	$\perp_{242}$	$\vdash_{243}$	$\models_{244}$	$\models_{245}$	$\Vdash_{246}$	$\Vdash_{247}$	$"Fx$
$\mathbf{o}_{37x}$	$\Vdash_{248}$	$\not\Vdash_{249}$	$\not\models_{250}$	$\not\models_{251}$	$\not\models_{252}$	$\models_{253}$	$\mathbf{X}_{254}$	$\models_{255}$	
	$"8$	$"9$	$"A$	$"B$	$"C$	$"D$	$"E$	$"F$	

## Brief samples using the sans serif options, showing mathgroup usage

1.

Options=[], and no use of \mathsfxxxx macros.

$$y = f(x).$$

```
*** Mathgroups ***
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
```

---

2.

Options= []

macro	symbol
\mathsf{x}	x
\mathsf{bf}{y}	y
\mathsf{bf}{z}	z
\mathsf{fit}{w}	undefined

```
*** Mathgroups ***
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
(7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)
(8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)
(9: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)
```

---

3.

Options=[nosans], and no use of \mathsfxxxx macros.

$$y = f(x).$$

```
*** Mathgroups ***
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])
```

(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])  
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])  
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])

---

#### 4.

Options=[nosans], and no use of \mathsfxxxx macros

macro	symbol
\mathsf{x}	x
\mathsf{bf}{y}	y
\mathsf{bf}{z}	undefined
\mathsf{it}{w}	undefined

\*\*\* Mathgroups \*\*\*

(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])  
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])  
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])  
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])  
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])  
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])  
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])  
(7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)  
(8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)

---

#### 5.

Options=[mathsf], and no use of \mathsfxxxx macros.

$$y = f(x).$$

\*\*\* Mathgroups \*\*\*

(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])  
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])  
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])  
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])  
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])  
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])  
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])

---

#### 6.

Options=[mathsf]

macro	symbol
\mathsf{x}	x
\mathsf{bf}{y}	y
\mathsf{bf}{z}	z
\mathsf{it}{w}	w

```

*** Mathgroups ***
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathhex/m/n/12 = libertinust1-mathhex at 14.39996pt [largesymbols])
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
(7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)
(8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)
(9: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)
(10: \LS1/libertinust1mathsf/m/it/12 = libertinust1-mathsfit at 14.39996pt)

```

---

7.

Options=[reuseMathAlphabets]

macro	symbol
\mathsf{x}	x
\mathsf{bf}{y}	y
\mathsf{bf}{it}{z}	z
\mathsf{it}{w}	undefined

```

*** Mathgroups ***
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])
(3: \LS2/libertinust1mathhex/m/n/12 = libertinust1-mathhex at 14.39996pt [largesymbols])
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])
(7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)
(8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)
(9: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)

```

---

8.

Options=[ISO]

macro	symbol
\mathsf{x}	x
\mathsf{bf}{y}	y
\mathsf{bf}{it}{z}	z
\mathsf{it}{w}	undefined

```

*** Mathgroups ***
(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])

```

---

(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])  
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])  
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])  
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])  
(7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)  
(8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)  
(9: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)

---

9.

Options=[ISO,mathsfit]

macro	symbol
\mathsf{x}	x
\mathsf{y}	y
\mathsf{z}	z
\mathsf{w}	w

\*\*\* Mathgroups \*\*\*

(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])  
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])  
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])  
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])  
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])  
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])  
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])  
(7: \LS1/libertinust1mathsf/m/n/12 = libertinust1-mathsfrm at 14.39996pt)  
(8: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)  
(9: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)  
(10: \LS1/libertinust1mathsf/m/it/12 = libertinust1-mathsfit at 14.39996pt)

---

10.

Options=[ISO,mathsfit,reuseMathAlphabets]

macro	symbol
\mathbf{y}	y
\mathsf{x}	x
\mathsf{y}	y
\mathsf{z}	z
\mathsf{w}	w

\*\*\* Mathgroups \*\*\*

(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathrm at 14.39996pt [operators])  
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathit at 14.39996pt [letters])  
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])  
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])  
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])  
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathrm-bold at 14.39996pt [bold-operators])

---

(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathit-bold at 14.39996pt [bold-letters])  
(7: \LS1/libertinust1mathsf/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt)  
(8: \LS1/libertinust1mathsf/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt)  
(9: \LS1/libertinust1mathsf/m/it/12 = libertinust1-mathsfit at 14.39996pt)

---

## 11: An example of sansmath.

Options=[sansmath]

The boundedness of  $\Phi_0$  then yields

$$\int_D |\bar{\partial}u|^2 e^{\alpha|z|^2} \geq c_6 \alpha \int_D |u|^2 e^{\alpha|z|^2} + c_7 \delta^{-2} \int_A |u|^2 e^{\alpha|z|^2}.$$

Let  $B(X)$  be the set of blocks of  $\Lambda_X$  and let  $b(X) := |B(X)|$ . If  $\varphi \in Q_X$  then  $\varphi$  is constant on the blocks of  $\Lambda_X$ .

$$P_X = \{\varphi \in M \mid \Lambda_\varphi = \Lambda_X\}, \quad Q_X = \{\varphi \in M \mid \Lambda_\varphi \geq \Lambda_X\}. \quad (1)$$

If  $\Lambda_\varphi \geq \Lambda_X$  then  $\Lambda_\varphi = \Lambda_Y$  for some  $Y \geq X$  so that

$$Q_X = \bigcup_{Y \geq X} P_Y.$$

Thus by Möbius inversion

$$P_Y = \sum_{X \geq Y} \mu(Y, X) Q_{\hat{X}}.$$

Thus there is a bijection from  $Q_X$  to  $W^{B(X)}$ . In particular  $|Q_X| = w^{b(X)}$ .

\*\*\* Mathgroups \*\*\*

---

(0: \LS1/libertinust1math/m/n/12 = libertinust1-mathsfrm at 14.39996pt [operators])  
(1: \LS1/libertinust1math/m/it/12 = libertinust1-mathsfit at 14.39996pt [letters])  
(2: \LS2/libertinust1mathsym/m/n/12 = libertinust1-mathsym at 14.39996pt [symbols])  
(3: \LS2/libertinust1mathex/m/n/12 = libertinust1-mathex at 14.39996pt [largesymbols])  
(4: \LS1/libertinust1mathbb/m/n/12 = libertinust1-mathbb at 14.39996pt [symbolsbb])  
(5: \LS1/libertinust1math/b/n/12 = libertinust1-mathsfrm-bold at 14.39996pt [bold-operators])  
(6: \LS1/libertinust1math/b/it/12 = libertinust1-mathsfit-bold at 14.39996pt [bold-letters])

---