

The unicode-math test suite

Will Robertson

Compiled: May 28, 2012

1 Preamble

The following pieces of output are generated from the code shown. As well as being good minimal examples, these tests are useful to ensure that new bugs don't affect old behaviour. When the test suite is run, the new output is compared pixel by pixel with that shown here and warnings produced if the outputs are not identical.

2 Test files for both engines

Only the Lua^AT_EX output is shown; there will be (usually only) negligible differences between the outout between the two engines.

2.1 Test F-active-sscripts-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\setlength\parskip{12pt}
\begin{document}
 $X_{012}$   $X_{123}$   $X_{234}$   $X_{345}$   $X_{456}$   $X_{567}$   $X_{678}$   $X_{789}$   $X_{89+}$ 
 $X_{9+-}$   $X_{+-(}$   $X_{-(=}$   $X_{(=)}$   $X_{=)}$   $X_{)ae}$   $X_{aeo}$   $X_{eox}$   $X_{ox0}$   $X_{x01}$ 
 $X_{0^{i+}n2}$   $X_{1^{i+}n2}$   $X_{2^{i+}n2}$   $X_{3^{i+}n2}$ 
 $X_{9+-}$   $X_{+-(}$   $X_{-(=}$   $X_{(=)}$   $X_{=)}$   $X_{)ae}$   $X_{aeo}$   $X_{eox}$   $X_{ox0}$   $X_{x01}$ 
 $X_{0^{i+}n2}$   $X_{1^{i+}n2}$   $X_{2^{i+}n2}$   $X_{3^{i+}n2}$ 
 $X_{34^{i+}n2}$ 
\end{document}
```

X_{012} X_{123} X_{234} X_{345} X_{456} X_{567} X_{678} X_{789} X_{89+}

X_{9+-} $X_{+-(}$ $X_{-(=}$ $X_{(=)}$ $X_{=)}$ $X_{)ae}$ X_{aeo} X_{eox} X_{ox0} X_{x01}

$X_{0^{i+}n2}$ $X_{1^{i+}n2}$ $X_{2^{i+}n2}$ $X_{3^{i+}n2}$

X_{9+-} $X_{+-(}$ $X_{-(=}$ $X_{(=)}$ $X_{=)}$ $X_{)ae}$ X_{aeo} X_{eox} X_{ox0} X_{x01}

$X_{0^{i+}n2}$ $X_{1^{i+}n2}$ $X_{2^{i+}n2}$ $X_{3^{i+}n2}$

$X_{34^{i+}n2}$

2.2 Test F-alph-spaces-L

```
\input{umtest-preamble}
\usepackage{amsmath}
\usepackage[math-style=ISO]{unicode-math}
\setmathfont{xits-math.otf}
\setmathfont[range=\mathit/{latin, greek, Greek}]{Asana-Math.otf}
\begin{document}
 $abc$   $ABC$   $\alpha\beta\gamma$   $AB\Gamma$ 
 $\alpha\beta\gamma$ 
 $\Alpha\Beta\Gamma$ 
\end{document}
```


abc ABC $\alpha\beta\gamma$ $AB\Gamma$

2.3 Test F-leftright-brace-L

<pre>\input{umtest-preamble} \usepackage{unicode-math} \setmathfont{Cambria Math} \begin{document} \[\left\{ \left\{ \left\{ \left\{ \left\{ x^2 \right\}^2 \right\}^2 \right\}^2 \right\}^2 \right\}^2 \right\}^2 \right\}^2 \] \end{document}</pre>	$\left(\left(\left(\left(\left(x^2\right)^2\right)^2\right)^2\right)^2\right)^2\right)^2$
--	---

$$\left\{ \left\{ \left\{ \left\{ \left\{ \left\{ x^2 \right\}^2 \right\}^2 \right\}^2 \right\}^2 \right\}^2 \right\}$$

2.4 Test F-leftright-bracket-L

<pre> \input{umtest-preamble} \usepackage{unicode-math} \setmathfont{Cambria Math} \begin{document} \[\left[\left[\left[\left[\left[\left[x^2 \right]^2 \right]^2 \right]^2 \right]^2 \right]^2 \right]^2 \right] \] \end{document} </pre>	
---	--

$$\left[\left[\left[\left[\left[x^2 \right]^2 \right]^2 \right]^2 \right]^2 \right]^2$$

2.5 Test F-leftright-paren-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\\[ \left( \left( \left( \left( \left( \left( x^2
      \right)^2 \right)^2 \right)^2 \right)^2 \right)^2 \right)] \\ 
\\[ \left( \left( \left( \left( \left( \left( x^2
      \right.^2 \right).^2 \right).^2 \right).^2 \right).^2 \right) \right). \\ 
\qquad \left. \left. \left. \left. \left. \left. x^2
      \right)^2 \right)^2 \right)^2 \right)^2 \right)^2 \right)] \\ 
\end{document}
```

$$\left(\left(\left(\left(\left(\left(\left(x^2\right)^2\right)^2\right)^2\right)^2\right)^2\right)^2\right)$$

2.6 Test F-leftright-vert-L

<pre> \input{umtest-preamble} \usepackage{unicode-math} \setmathfont{Cambria Math} \begin{document} \[\left \left \left \left \left \left x^2 \right. \right. \right. \right. \right. \right. \right ^2 \right ^2 \right ^2 \right ^2 \right ^2 \right \] \left\ \left\ \left\ \left\ \left\ \left\ x^2 \right. \right. \right. \right. \right. \right. \right\ ^2 \right\ ^2 \right\ ^2 \right\ ^2 \right\ ^2 \right\ \end{document} </pre>	
---	--

2.7 Test F-leftright-vvert-L

<pre> \input{umtest-preamble} \usepackage{unicode-math} \setmathfont{Cambria Math} \begin{document} \[\left[\left[\left[\left[\left[\left[x^2 \right. \right. \right. \right. \right. \right. \right. \right]^2 \right]^2 \right]^2 \right]^2 \right]^2 \right]^2 \] \end{document} </pre>	
---	--

2.8 Test F-mathstyle-french-L

<pre> \input{umtest-preamble} \usepackage[math-style=french]{unicode-math} \setmathfont{Cambria Math} \begin{document} \[\backslash\text{LATINtext}\backslash\] \[\backslash\text{latintext}\backslash\] \[\backslash\text{LATINmath}\backslash\] \[\backslash\text{latinmath}\backslash\] \end{document} </pre>	<p> ABCDEFGHIJKLMNOPQRSTUVWXYZ <i>abcdefghijklmnopqrstuvwxyz</i> ABCDEFGHIJKLMNOPQRSTUVWXYZ <i>abcdefghijklmnopqrstuvwxyz</i> </p>
--	---

2.9 Test F-mathstyle-iso-L

```
\input{umtest-preamble}  
\usepackage[math-style=ISO]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\LATINText\  
\[\latintext\  
\[\LATINmath\  
\[\latinmath\  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

2.10 Test F-mathstyle-literal-L

```
\input{umtest-preamble}  
\usepackage[math-style=literal]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\LATINText\  
\[\latintext\  
\[\LATINmath\  
\[\latinmath\  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

2.11 Test F-mathstyle-tex-L

```
\input{umtest-preamble}  
\usepackage[math-style=TeX]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\LATINText\  
\[\latintext\  
\[\LATINmath\  
\[\latinmath\  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

2.12 Test F-mathstyle-upright-L

```
\input{umtest-preamble}
\usepackage[math-style=upright]{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\backslash\text{LATINtext}\backslash]
\[\backslash\text{latinintext}\backslash]
\[\backslash\text{LATINmath}\backslash]
\[\backslash\text{latinmath}\backslash]
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

2.13 Test F-mathversion-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{xits-math.otf}
\setmathfont[version=bold,Colour=009900]{xits-math.otf}
\begin{document}
\[(x+y)^{\{z+c\}^{\{a+b\}}}]
\]
\mathversion{bold}
\[(x+y)^{\{z+c\}^{\{a+b\}}}]
\]
\end{document}
```

$(x + y)^{z+c^{a+b}}$
 $(x + y)^{z+c^{a+b}}$

2.14 Test F-nolimits-spec-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{xits-math.otf}
\begin{document}
\[\backslash\iiint_V\backslash]
\removenolimits\iiint
\[\backslash\iiint_V\backslash]
\addnolimits\iiint
\[\backslash\iiint_V\backslash]
\end{document}
```

\iiint_V
 \iiint_V
 \iiint_V

2.15 Test F-pkg-url-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmainfont{TeX Gyre Pagella}
\setsansfont{TeX Gyre Adventor}
\setmonofont{TeX Gyre Cursor}
\setmathfont{Cambria Math}
\usepackage{url}
\begin{document}
\centering\obeylines
\url{http://www.lmgtfy.com/}
\url{?q="~!@#$$%^&*()<>`'}
\urlstyle{rm}
\url{http://www.lmgtfy.com/}
\url{?q="~!@#$$%^&*()<>`'}
\urlstyle{sf}
\url{http://www.lmgtfy.com/}
\url{?q="~!@#$$%^&*()<>`'}
\end{document}
```

```
http://www.lmgtfy.com/
?q="~!@#$$%^&*()<>`'
http://www.lmgtfy.com/
?q="~!@#$$%^&*()<>`'
http://www.lmgtfy.com/
?q="~!@#$$%^&*()<>`'
```

2.16 Test F-primes-1-L

```
\input{umtest-preamble}
\usepackage{amsmath,unicode-math}
\setmathfont{Cambria Math}
\begin{document}
  [${x\prime\prime\prime}$]
  [${x\prime\prime\prime\prime\prime\prime\prime\prime}$]
  [${x'}$]
  [${x'''}$]
  [${x''''''}$]
  [${x_{\prime}}$]
  [${x_{\prime\prime}}$]
  [${x_{\prime\prime\prime}\prime\prime}$]}

  $x_{\prime\prime\prime\prime}$
  $x_{\prime\prime\prime\prime}$
  $x_{\prime\prime}$
  $x_{\prime}$

\end{document}
```

```
[x'''] [x'''''] [x'] [x'''] [x'''''] [x'] [x'''] [x''''']
x'''''' x'''''' x''' x'''
```

2.17 Test F-primes-2-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Asana Math}
\begin{document}
 $[x_x]'$ 
 $[x_x]''$ 
 $[x_x]\prime$ 
 $[x_x]`$ 
 $[x_x]\backprime$ 

```

```
[$x'_x$]  
[$x\prime_x$]  
[$x\backprime_x$]  
[$x\_x$]  
[$x\backprime_x$]
```

```
[$x_{x'}$]  
[$x_{x\boxtimes}$]  
[$x_{x\backslash\prime}$]  
[$x_{x`}$]  
[$x_{x\backslash\backprime}$]
```

\end{document}

$$\begin{array}{ccccc} [x'_x] & [x'_x] & [x_{x'}] & [x'_x] & [x_{x'}] \\ [x'_x] & [x'_x] & [x'_{x'}] & [x'_x] & [x'_{x'}] \\ [x_{x'}] & [x_{x'}] & [x_{x'}] & [x_{x'}] & [x_{x'}] \end{array}$$

2.18 Test F-primes-back-L

```
\input{umtest-preamble}
\usepackage{amsmath,unicode-math}
\setmathfont{Asana Math}
\begin{document}
```

$$[x \backslash \text{backprime} \backslash \text{backprime} \backslash \text{backprime}]$$
$$[\{x\backslash\backprime\backprime\backprime\backprime\backprime\backprime\backprime\}]$$
$$[\$ \{x'\} \$]$$
$$[\$ \{x \text{ ' ' ' } \} \$]$$
$$[\$ \{x^{'''''}\} \$]$$
$$[\$ \{ x_{\square} \} \$]$$
$$[\$ \{ x_{???} \} \$]$$
$$[\$ \{x_{\backslash \text{backprime}}\} \$]$$

\$x` ???\$

\$x??\$

$\$x \square ? \$$

\end{document}

$$[x^{(1)}] [x^{(2)}] [x^{(3)}] [x^{(4)}] [x^{(5)}] [x^{(6)}] [x^{(7)}] [x^{(8)}]$$

2.19 Test F-query-mathstyle-L

```
\input{umtest-preamble}

\usepackage{unicode-math}
\setmathfont[Colour=FF0000]{xits-math.otf}

\begin{document}

\ExplSyntaxOn
[$\l_um_mathstyle_tl$]\
[$\mathrm{\l_um_mathstyle_tl}$]\
[$\mathup{\l_um_mathstyle_tl}$]\
[$\mathit{\l_um_mathstyle_tl}$]\

[$\mathbf{\l_um_mathstyle_tl}$]\
[$\mathbf{\l_um_mathstyle_tl}$]\
[$\mathbfup{\l_um_mathstyle_tl}$]\

[$\mathsf{\l_um_mathstyle_tl}$]\
[$\mathsf{\l_um_mathstyle_tl}$]\
[$\mathsfup{\l_um_mathstyle_tl}$]\

[$\mathbfsf{\l_um_mathstyle_tl}$]\
[$\mathbfsf{\l_um_mathstyle_tl}$]\
[$\mathbfsfup{\l_um_mathstyle_tl}$]\

\end{document}
```

$\l_um_mathstyle_tl$ $\mathit{\l_um_mathstyle_tl}$ $\mathbf{\l_um_mathstyle_tl}$ $\mathbfup{\l_um_mathstyle_tl}$ $\mathsf{\l_um_mathstyle_tl}$ $\mathsfup{\l_um_mathstyle_tl}$ $\mathbfsf{\l_um_mathstyle_tl}$ $\mathbfsfup{\l_um_mathstyle_tl}$

2.20 Test F-range-alpha-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont[Colour=330000]{Cambria Math}
\setmathfont[range=\mathit/{latin}, Colour=660000]{Cambria Math}
\setmathfont[range=\mathit/{Greek}, Colour=990000]{Cambria Math}
\setmathfont[range=\mathit/{greek}, Colour=BB0000]{Cambria Math}
\setmathfont[range=\mathup/{num}, Colour=EE0000]{Cambria Math}
\begin{document}
\[\mathit{\LATINText}\]
\[\mathit{\latintext}\]
\[\mathit{\GREEKtext}\]
\[\mathit{\greektext}\]
\[\mathup{0123456789}\]
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
 ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
 αβγδεζηθικλμνξοπρρςστυφφχψω
 0123456789

2.21 Test F-range-mapping-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont[
  range={
    \mathit/{latin}->\mathbfup ,
    \mathit/{Latin}->\mathsfup
  }
]{Cambria Math}
\setmathfont[
  range={
    \mathup/{Greek}->\mathbfup ,
    \mathit/{greek}->\mathbfit
  },
  Colour=990000
]{Cambria Math}
\begin{document}
\vspace*{-1cm}
\[\backslash\text{LATINtext}\backslash\]
\[\backslash\text{latin}\backslash\]
\[\backslash\mathit{\text{LATINtext}}\backslash\]
\[\backslash\mathit{\text{latin}}\backslash\]
\[\backslash\text{GREEKtext}\backslash\]
\[\backslash\text{greek}\backslash\]
\[\backslash\mathup{\text{GREEKtext}}\backslash\]
\[\backslash\mathit{\text{greek}}\backslash\]
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
 ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
 αβγδεζηθικλμνξοπρρςστυφχψω
 ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
 αβγδεζηθικλμνξοπρρςστυφχψω

2.22 Test F-range-slots-L

```
\input{umtest-preamble}
\usepackage[svgnames]{xcolor}
\usepackage[vargreek-shape=unicode]{unicode-math}
\setmathfont{xits-math.otf}
\setmathfont[range={"1D703","1D70E"},Colour=Magenta]{xits-math.otf}
\setmathfont[range={"1D711-"},Colour=Green]{xits-math.otf}
\setmathfont[range={"-1D700"},Colour=Red]{xits-math.otf}
\setmathfont[range={"1D706-"1D709"},Colour=Blue]{xits-math.otf}
\begin{document}
\(\alpha\beta\gamma\delta\epsilon\zeta\eta\theta\iota\kappa\lambda\mu\nu\xi\pi\rho\sigma\tau\upsilon\phi\chi\psi\omega)
\end{document}
```

αβγδεζηθικλμνξπρστυφχψω

2.23 Test F-range-style-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont[Colour=000000]{Cambria Math}
\setmathfont[range=\mathscr, Colour=FF0000]{Cambria Math}
\setmathfont[range=\mathfrak, Colour=0000FF]{Cambria Math}
\begin{document}
\[\backslash\text{latin}\backslash\]
\[\backslash\mathscr{\text{latin}}\backslash\]
\[\backslash\mathfrak{\text{latin}}\backslash\]
\[\backslash\text{LATINmath}\backslash\]
\[\backslash\mathscr{\text{LATINmath}}\backslash\]
\[\backslash\mathfrak{\text{LATINmath}}\backslash\]
\end{document}
```

abcdefghijklmnopqrstuvwxyz
 abcdefghijklmnopqrstuvwxyz
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 ABCDEFGHIJKLMNOPQRSTUVWXYZ

2.24 Test F-slash-delim-2-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\begin{document}
\newcommand\ARRAY[4]{%
  \begin{array}{cc}
    #1 & #2 \\
    #3 & #4
  \end{array}}
\def\test{\[
  \left.\left[\ARRAY{a}{b}{c}{d}\right]
  \middle\slash
  \left[\ARRAY{1}{1}{1}{\mathsf{0}}\right]
  \right.\]}
\setmathfont
  [slash-delimiter=frac]{Cambria Math}
\setmathfont
  [range={\mathsfup},
  Color=0000FF]
  {STIXGeneral}
\test
\setmathfont
  [slash-delimiter=frac,
  range="2044,
  Color=FF0000]
  {Cambria Math}
\test
\end{document}
```

$$\left[\begin{array}{cc} a & b \\ c & d \end{array}\right] \bigg/ \left[\begin{array}{cc} 1 & 1 \\ 1 & \textcolor{blue}{0} \end{array}\right]$$

$$\left[\begin{array}{cc} a & b \\ c & d \end{array}\right] \bigg/ \left[\begin{array}{cc} 1 & 1 \\ 1 & \textcolor{red}{0} \end{array}\right]$$

2.25 Test F-sqrt-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[ \sqrt{\sin^2 x + \cos^2 x} = 1 \quad \backslash
\backslash \sqrt{1 + \sqrt{1 + \sqrt{1 + \sqrt{1 + x}}}} \backslash
\end{document}
```

$$\sqrt{\sin^2 x + \cos^2 x} = 1$$

$$\sqrt{1 + \sqrt{1 + \sqrt{1 + \sqrt{1 + x}}}}$$

2.26 Test F-sqrt-n-L

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[ \sqrt[n]{1 + \sqrt[n]{1 + \sqrt[n]{1 + \sqrt[n]{1 + \sqrt[n]{1 + x}}}}} \backslash
\end{document}
```

$$\sqrt[n]{1 + \sqrt[n]{1 + \sqrt[n]{1 + \sqrt[n]{1 + \sqrt[n]{1 + x}}}}}$$

2.27 Test F-sscript-features-L

<pre> \input{umtest-preamble} \usepackage{unicode-math} \setmathfont[script-font = {Asana Math}, script-features = {Style=MathScript,Colour=FF0000}, sscript-font = {Cambria Math}, sscript-features= {Style=MathScriptScript,Colour=0000FF}] {XITS Math} \begin{document} \[123456789^{\{123456789^{\{123456789\}}}\}] \end{document} </pre>	
--	--

3 Lua^AT_EX test files

3.1 Test L-sscale-dimen

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{XITS Math}
\begin{document}
$ $ \\
\number \fontdimen 10 \textfont 0 \\
\number \fontdimen 11 \textfont 0 \\
\number \fontdimen 10 \scriptfont 0 \\
\number \fontdimen 11 \scriptfont 0 \\
\number \fontdimen 10 \scriptscriptfont 0 \\
\number \fontdimen 11 \scriptscriptfont 0
\end{document}
```

75
60
75
60
75
60

3.2 Test L600a

```
\input{umtest-preamble}
\usepackage{amsmath}
\begin{document}
\[
\sum_{\substack{a \\\ bbb}}
\sum_{\substack{\dfrac{12 \\\ \vec A'}}}
\sum_{\begin{subarray}{l} 1 \end{subarray}} a \\\ bbb \end{subarray}}
\]
\end{document}
```

$$\sum_{bbb}^a \sum_{\frac{1}{2}A'} \sum_{bbb}^a$$

3.3 Test L600b

```
\input{umtest-preamble}
\usepackage{amsmath}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[
\sum_{\substack{a \\ bbb}} \sum_{\substack{1 \\ 2 \\ A'}} \sum_{\substack{a \\ bbb}}
\sum_{\substack{\dfrac{12}{12} \\ \vec{A}'}}
\sum_{\begin{subarray}{l} 1 \\ a \end{subarray}} \sum_{\substack{a \\ bbb}}
\]
\end{document}
```

$$\sum_{\substack{a \\ bbb}} \sum_{\substack{1 \\ 2 \\ A'}} \sum_{\substack{a \\ bbb}}$$

3.4 Test L601a

```
\input{umtest-preamble}
\usepackage{mathtools}
\begin{document}
\[
\frac{a^2 + b^2}{a^2 + b^2}
\frac{\cramped{a^2 + b^2}}{a^2 + b^2}
\frac{a^2 + b^2}{\cramped{a^2 + b^2}}
\]
\left(
\frac{a^2 + b^2}{a^2 + b^2}
\frac{\cramped{a^2 + b^2}}{a^2 + b^2}
\frac{a^2 + b^2}{\cramped{a^2 + b^2}}
\right)
a^{\left(
\frac{a^2 + b^2}{a^2 + b^2}
\frac{\cramped{a^2 + b^2}}{a^2 + b^2}
\frac{a^2 + b^2}{\cramped{a^2 + b^2}}
\right)}
a^{\left(
\frac{a^2 + b^2}{a^2 + b^2}
\frac{\cramped{a^2 + b^2}}{a^2 + b^2}
\frac{a^2 + b^2}{\cramped{a^2 + b^2}}
\right)}
\]
\end{document}
```

$$\frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2}$$

$$\frac{\frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2}}{a^{\frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2}}}$$

```

\input{umtest-preamble}
\usepackage{mathtools}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[
\frac{a^2 + b^2}{a^2 + b^2}
\frac{\cramped{a^2 + b^2}}{a^2 + b^2}
\frac{a^2 + b^2}{\cramped{a^2 + b^2}}
\]
\(\frac{a^2 + b^2}{a^2 + b^2}\)
\(\frac{\cramped{a^2 + b^2}}{a^2 + b^2}\)
\(\frac{a^2 + b^2}{\cramped{a^2 + b^2}}\)
a^{
  \frac{a^2 + b^2}{a^2 + b^2}
  \frac{\cramped{a^2 + b^2}}{a^2 + b^2}
  \frac{a^2 + b^2}{\cramped{a^2 + b^2}}
}
a^{
  a^{
    \frac{a^2 + b^2}{a^2 + b^2}
    \frac{\cramped{a^2 + b^2}}{a^2 + b^2}
    \frac{a^2 + b^2}{\cramped{a^2 + b^2}}
  }
}
\end{document}

```

$$\frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2} a^{\frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2}}$$

```

\input{umtest-preamble}
\usepackage{mathtools}
\usepackage{unicode-math}
\setmathfont{XITS Math}
\begin{document}
\[
\frac{a^2 + b^2}{a^2 + b^2}
\frac{\cramped{a^2 + b^2}}{a^2 + b^2}
\frac{a^2 + b^2}{\cramped{a^2 + b^2}}
\]
\(\frac{a^2 + b^2}{a^2 + b^2}\)
\(\frac{\cramped{a^2 + b^2}}{a^2 + b^2}\)
\(\frac{a^2 + b^2}{\cramped{a^2 + b^2}}\)
a^{
  \frac{a^2 + b^2}{a^2 + b^2}
  \frac{\cramped{a^2 + b^2}}{a^2 + b^2}
  \frac{a^2 + b^2}{\cramped{a^2 + b^2}}
}
a^{
  a^{
    \frac{a^2 + b^2}{a^2 + b^2}
    \frac{\cramped{a^2 + b^2}}{a^2 + b^2}
    \frac{a^2 + b^2}{\cramped{a^2 + b^2}}
  }
}
\end{document}

```

$$\frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2} \frac{a^2 + b^2}{a^2 + b^2}$$

3.7 Test L602b

```
\input{umtest-preamble}

\usepackage{unicode-math}

\setmathfont{xits-math.otf}

\ExplSyntaxOn

\NewDocumentCommand \mathstylename { } {
  \mathtt {
    \prg_case_int:nnn { \luatexmathstyle } {
      { \displaystyle } { \token_to_str:N \displaystyle }
      { \luatexcrampeddisplaystyle } { \token_to_str:N \crampeddisplaystyle }
      { \textstyle } { \token_to_str:N \textstyle }
      { \luatexcrampedtextstyle } { \token_to_str:N \crampedtextstyle }
      { \scriptstyle } { \token_to_str:N \scriptstyle }
      { \luatexcrampedscriptstyle } { \token_to_str:N \crampedscriptstyle }
      { \scriptscriptstyle } { \token_to_str:N \scriptscriptstyle }
      { \luatexcrampedscriptscriptstyle } { \token_to_str:N \crampedscriptscriptstyle }
    } {
      outside math
    }
  }
}

\ExplSyntaxOff

\begin{document}


$$\frac{\mathstylename}{\mathstylename}$$



$$\frac{\mathstylename}{\mathstylename}$$



$$\frac{\mathstylename}{\mathstylename}$$


\end{document}
```

3.8 Test L603b

```

\input{umtest-preamble}

\usepackage{amsmath}
\usepackage{unicode-math}

\setmathfont{xits-math.otf}

\ExplSyntaxOn

\NewDocumentCommand \mathstylename { } {
  \mathtt {
    \prg_case_int:nnn { \luatexmathstyle } {
      { \displaystyle } { \token_to_str:N \displaystyle }
      { \luatexcrampeddisplaystyle } { \token_to_str:N \crampeddisplaystyle }
      { \textstyle } { \token_to_str:N \textstyle }
      { \luatexcrampedtextstyle } { \token_to_str:N \crampedtextstyle }
      { \scriptstyle } { \token_to_str:N \scriptstyle }
      { \luatexcrampedscriptstyle } { \token_to_str:N \crampedscriptstyle }
      { \scriptscriptstyle } { \token_to_str:N \scriptscriptstyle }
      { \luatexcrampedscriptscriptstyle } { \token_to_str:N \crampedscriptscriptstyle }
    } {
      outside math
    }
  }
}

\ExplSyntaxOff

\begin{document}

$\mathstylename \over \mathstylename$

$\luatexUstack{\mathstylename \over \mathstylename}$

$\frac{\mathstylename}{\mathstylename}$

$\dfrac{\mathstylename}{\mathstylename}$

$\tfrac{\mathstylename}{\mathstylename}$

$\binom{\mathstylename}{\mathstylename}$

$\genfrac{/}{}){}{}{\mathstylename}{\mathstylename}$

\end{document}

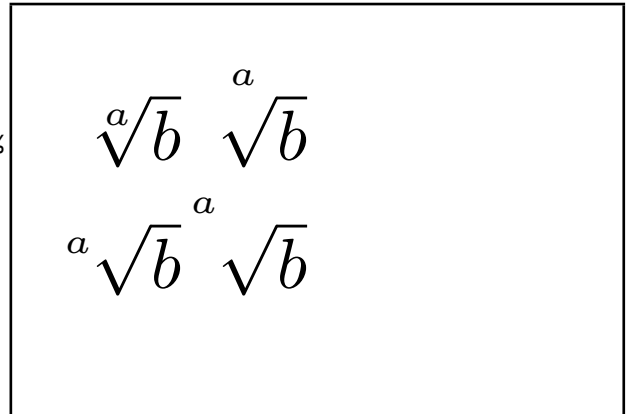
```

\displaystyle	displaystyle
\crampeddisplaystyle	crampeddisplaystyle
\textstyle	textstyle
\crampedtextstyle	crampedtextstyle
\scriptstyle	scriptstyle
\crampedscriptstyle	crampedscriptstyle
\scriptscriptstyle	scriptscriptstyle
$\crampedscriptscriptstyle$	crampedscriptscriptstyle

3.9 Test L604a

```
\input{umtest-preamble}
\usepackage{amsmath}
\usepackage{graphicx}
\newcommand*{\test}[1]{%
  \parbox[b][50pt][50pt]{\scalebox{3}{\$#1\$}}%
}
\begin{document}
\test{\sqrt[a]{b}}
\test{\sqrt[\uproot{10}a]{b}}

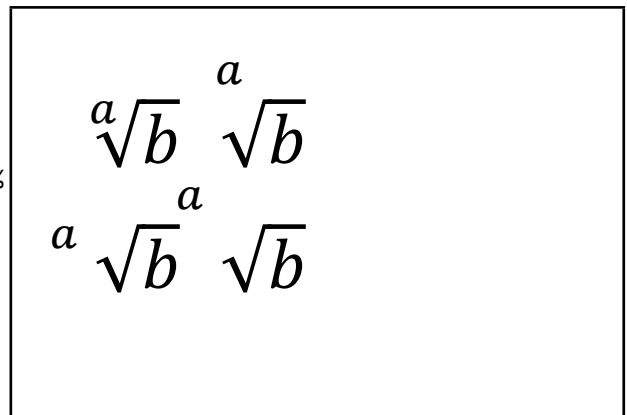
\test{\sqrt[\leftroot{10}a]{b}}
\test{\sqrt[\leftroot{10}\uproot{10}a]{b}}
\end{document}
```



3.10 Test L604b

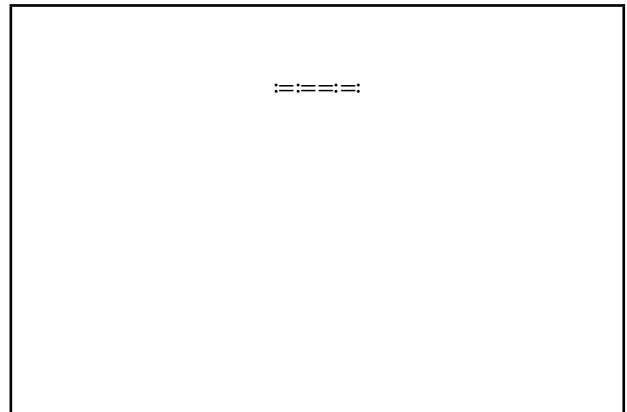
```
\input{umtest-preamble}
\usepackage{unicode-math}
\usepackage{amsmath}
\usepackage{graphicx}
\setmathfont{Cambria Math}
\newcommand*{\test}[1]{%
  \parbox[b][50pt][50pt]{\scalebox{3}{\$#1\$}}%
}
\begin{document}
\test{\sqrt[a]{b}}
\test{\sqrt[\uproot{10}a]{b}}

\test{\sqrt[\leftroot{10}a]{b}}
\test{\sqrt[\leftroot{10}\uproot{10}a]{b}}
\end{document}
```



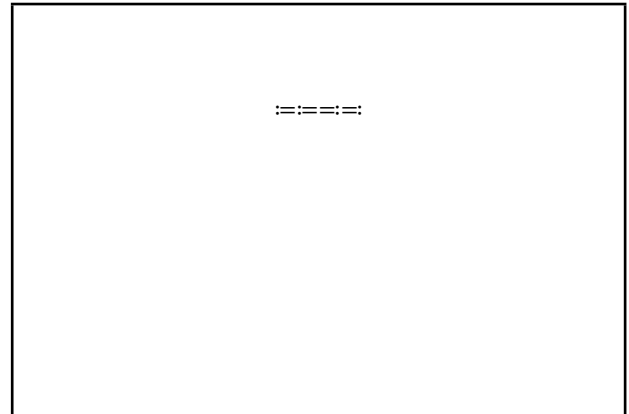
3.11 Test L650a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\usepackage{mathtools}
\setmathfont{Cambria Math}
\begin{document}
\[
\coloneq
\coloneqq
\eqcolon
\eqqcolon
\]
\end{document}
```



3.12 Test L650b

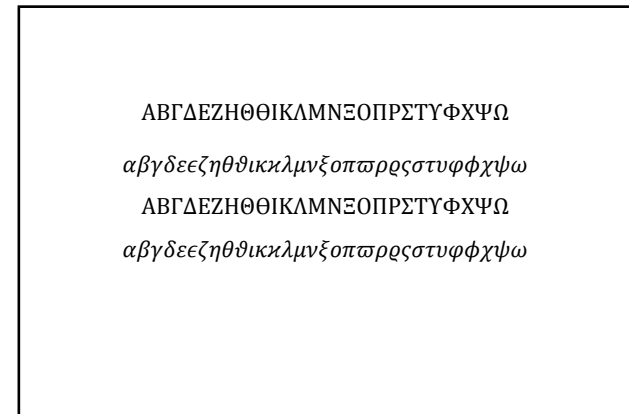
```
\input{umtest-preamble}
\usepackage{unicode-math}
\usepackage{colonequals}
\setmathfont{Cambria Math}
\begin{document}
\[
\coloneq
\colonequals
\eqcolon
\equalscolon
\]
\end{document}
```



4 X_YL^AT_EX test files

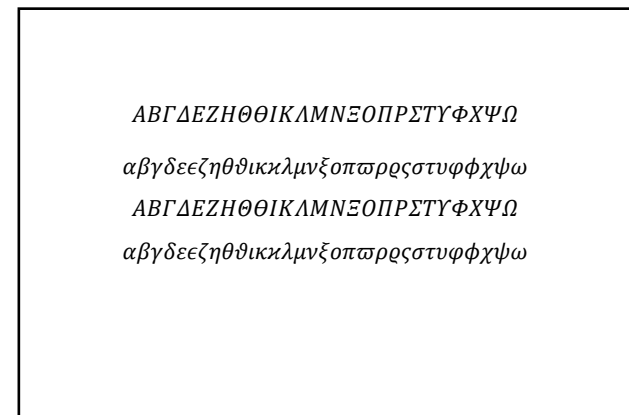
4.1 Test X002a

```
\input{umtest-preamble}
\usepackage[math-style=TeX]{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\GREEKtext\]
\[\greektext\]
\[\GREEKmath\]
\[\greekmath\]
\end{document}
```



4.2 Test X002b

```
\input{umtest-preamble}
\usepackage[math-style=ISO]{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\GREEKtext\]
\[\greektext\]
\[\GREEKmath\]
\[\greekmath\]
\end{document}
```



4.3 Test X002c

```
\input{umtest-preamble}  
\usepackage[math-style=literal]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\GREEKtext\]  
\[\greektext\]  
\[\GREEKmath\]  
\[\greekmath\]  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπωρρςστυφφχψω
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπωρρςστυφφχψω

4.4 Test X002d

```
\input{umtest-preamble}  
\usepackage[math-style=french]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\GREEKtext\]  
\[\greektext\]  
\[\GREEKmath\]  
\[\greekmath\]  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπωρρςστυφφχψω
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπωρρςστυφφχψω

4.5 Test X002e

```
\input{umtest-preamble}  
\usepackage[math-style=upright]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\GREEKtext\]  
\[\greektext\]  
\[\GREEKmath\]  
\[\greekmath\]  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπωρρςστυφφχψω
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπωρρςστυφφχψω

4.6 Test X003a

```
\input{umtest-preamble}  
\usepackage[bold-style=TeX]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\backslash\mathrm{LATINmathbfup}\]  
\[\backslash\mathrm{LATINmathbfit}\]  
\[\backslash\mathrm{latinmathbfup}\]  
\[\backslash\mathrm{latinmathbfit}\]  
\[\backslash\mathrm{numbersmathbfup}\]  
\end{document}
```

ABCDEFGHIJKLMN**OP**QRSTUVWXY**Z**
ABCDEFGHIJKLMN**OP**QRSTUVWXY**Z**
*abcdefghijklmnopqrstuvwx**yz***
*abcdefghijklmnopqrstuvwx**yz***
0123456789

4.7 Test X003b

```
\input{umtest-preamble}  
\usepackage[bold-style=TeX]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\backslash\mathrm{GREEKmathbfup}\]  
\[\backslash\mathrm{GREEKmathbfit}\]  
\[\backslash\mathrm{greekmathbfup}\]  
\[\backslash\mathrm{greekmathbfit}\]  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΕΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΕΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπωρρςστυφφχψω
αβγδεεζηθθικλμνξοπωρρςστυφφχψω

4.8 Test X003c

```
\input{umtest-preamble}  
\usepackage[bold-style=TeX]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\backslash\mathrm{mathbf}\backslash\mathrm{LATINmath}\backslash\  
\[\backslash\mathrm{mathbf}\backslash\mathrm{LATINtext}\backslash\  
\[\backslash\mathrm{mathbf}\backslash\mathrm{latinmath}\backslash\  
\[\backslash\mathrm{mathbf}\backslash\mathrm{latintext}\backslash\  
\[\backslash\mathrm{mathbf}\{0123456789\}\backslash\  
\end{document}
```

ABCDEFGHIJKLMN**OP**QRSTUVWXY**Z**
ABCDEFGHIJKLMN**OP**QRSTUVWXY**Z**
*abcdefghijklmnopqrstuvwx**yz***
*abcdefghijklmnopqrstuvwx**yz***
0123456789

4.9 Test X003d

```
\input{umtest-preamble}  
\usepackage[bold-style=TeX]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf{\GREEKmath\}  
\[\mathbf{\GREEKtext\}  
\[\mathbf{\greekmath\}  
\[\mathbf{\greektext\}  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικκλμνξοπωρρςστυφφχψω
αβγδεεζηθθικκλμνξοπωρρςστυφφχψω

4.10 Test X003e

```
\input{umtest-preamble}  
\usepackage[bold-style=ISO]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\LATINmathbfup\  
\[\LATINmathbfit\  
\[\latinmathbfup\  
\[\latinmathbfit\  
\[\numbersmathbfup\  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.11 Test X003f

```
\input{umtest-preamble}  
\usepackage[bold-style=ISO]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\GREEKmathbfup\  
\[\GREEKmathbfit\  
\[\greekmathbfup\  
\[\greekmathbfit\  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικκλμνξοπωρρςστυφφχψω
αβγδεεζηθθικκλμνξοπωρρςστυφφχψω

4.12 Test X003g

```
\input{umtest-preamble}  
\usepackage[bold-style=ISO]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf{LATINmath}\]  
\[\mathbf{LATINtext}\]  
\[\mathbf{latinmath}\]  
\[\mathbf{latintext}\]  
\[\mathbf{0123456789}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxy
abcdefghijklmnopqrstuvwxy
0123456789

4.13 Test X003h

```
\input{umtest-preamble}  
\usepackage[bold-style=ISO]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf{GREEKmath}\]  
\[\mathbf{GREEKtext}\]  
\[\mathbf{greekmath}\]  
\[\mathbf{greektext}\]  
\end{document}
```

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεζηθικλμνξοπρρςστυφχψω
αβγδεζηθικλμνξοπρρςστυφχψω

4.14 Test X003i

```
\input{umtest-preamble}  
\usepackage[bold-style=upright]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\LATINmathbfup\]  
\[\LATINmathbfup\]  
\[\latinmathbfup\]  
\[\latinmathbfup\]  
\[\numbersmathbfup\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxy
abcdefghijklmnopqrstuvwxy
0123456789

4.15 Test X003j

```
\input{umtest-preamble}  
\usepackage[bold-style=upright]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\GREEKmathbfup\  
\[\GREEKmathbfit\  
\[\greekmathbfup\  
\[\greekmathbfit\  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεζηθθικλμνξοπρρςστυφφχψω
αβγδεζηθθικλμνξοπρρςστυφφχψω

4.16 Test X003k

```
\input{umtest-preamble}  
\usepackage[bold-style=upright]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf\{LATINmath\  
\[\mathbf\{LATINtext\  
\[\mathbf\{latinmath\  
\[\mathbf\{latinintext\  
\[\mathbf\{0123456789\  
\end{document}
```

ΑΒΓΔΕΖΗΘΙΚΛΜΝΟΠΡΣΤΥVWXYZ
ΑΒΓΔΕΖΗΘΙΚΛΜΝΟΠΡΣΤΥVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.17 Test X003l

```
\input{umtest-preamble}  
\usepackage[bold-style=upright]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf\{GREEKmath\  
\[\mathbf\{GREEKtext\  
\[\mathbf\{greekmath\  
\[\mathbf\{greektext\  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεζηθθικλμνξοπρρςστυφφχψω
αβγδεζηθθικλμνξοπρρςστυφφχψω

4.18 Test X003m

```
\input{umtest-preamble}  
\usepackage[bold-style=literal]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf{A}\]  
\[\mathbf{B}\]  
\[\mathbf{a}\]  
\[\mathbf{b}\]  
\[\mathbf{0}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.19 Test X003n

```
\input{umtest-preamble}  
\usepackage[bold-style=literal]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf{A}\]  
\[\mathbf{B}\]  
\[\mathbf{a}\]  
\[\mathbf{b}\]  
\end{document}
```

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεζηθικλμνξοπρρςστυφφχψω
αβγδεζηθικλμνξοπρρςστυφφχψω

4.20 Test X003o

```
\input{umtest-preamble}  
\usepackage[bold-style=literal]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf{A}\]  
\[\mathbf{B}\]  
\[\mathbf{a}\]  
\[\mathbf{b}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.21 Test X003p

```
\input{umtest-preamble}  
\usepackage[bold-style=literal]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf{\GREEKmath\}]  
\[\mathbf{\GREEKtext\}]  
\[\mathbf{\greekmath\}]  
\[\mathbf{\greektext\}]  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικκλμνξοπωρρςστυφφχψω
αβγδεεζηθθικκλμνξοπωρρςστυφφχψω

4.22 Test X004a

```
\input{umtest-preamble}  
\usepackage[sans-style=upright]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\LATINmathsfup\]  
\[\LATINmathsfitt\]  
\[\latinmathsfup\]  
\[\latinmathsfitt\]  
\[\numbersmathsfup\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.23 Test X004b

```
\input{umtest-preamble}  
\usepackage[sans-style=upright]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathsf{\LATINtext}\]  
\[\mathsf{\LATINmath}\]  
\[\mathsf{\latinintext}\]  
\[\mathsf{\latinmath}\]  
\[\mathsf{0123456789}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.24 Test X004c

```
\input{umtest-preamble}  
\usepackage[sans-style=italic]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\backslash\mathrm{LATINmathsfup}\]  
\[\backslash\mathrm{LATINmathsfit}\]  
\[\backslash\mathrm{latinmathsfup}\]  
\[\backslash\mathrm{latinmathsfit}\]  
\[\backslash\mathrm{numbersmathsfup}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.25 Test X004d

```
\input{umtest-preamble}  
\usepackage[sans-style=italic]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathsf{\backslash\mathrm{LATINtext}}\]  
\[\mathsf{\backslash\mathrm{LATINmath}}\]  
\[\mathsf{\backslash\mathrm{latintext}}\]  
\[\mathsf{\backslash\mathrm{latinmath}}\]  
\[\mathsf{\backslash\mathrm{0123456789}}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.26 Test X004e

```
\input{umtest-preamble}  
\usepackage[sans-style=literal]{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\backslash\mathrm{LATINmathsfup}\]  
\[\backslash\mathrm{LATINmathsfit}\]  
\[\backslash\mathrm{latinmathsfup}\]  
\[\backslash\mathrm{latinmathsfit}\]  
\[\backslash\mathrm{numbersmathsfup}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.27 Test X004f

```
\input{umtest-preamble}
\usepackage[sans-style=literal]{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\mathsf{\backslash LATINtext}\]
\[\mathsf{\backslash LATINmath}\]
\[\mathsf{\backslash latintext}\]
\[\mathsf{\backslash latinmath}\]
\[\mathsf{0123456789}\]
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.28 Test X005a

```
\input{umtest-preamble}
\usepackage[sans-style=upright]{unicode-math}
\setmathfont{Code2001}
\begin{document}
\[\backslash LATINmathbbsfup\]
\[\backslash LATINmathbbsffit\]
\[\backslash latinmathbbsfup\]
\[\backslash latinmathbbsffit\]
\[\backslash numbersmathbbsfup\]
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.29 Test X005b

```
\input{umtest-preamble}
\usepackage[sans-style=upright]{unicode-math}
\setmathfont{Code2001}
\begin{document}
\[\backslash GREEKmathbbsfup\]
\[\backslash GREEKmathbbsffit\]
\[\backslash greekmathbbsfup\]
\[\backslash greekmathbbsffit\]
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπαρρςστυφθχψω
αβγδεεζηθθικλμνξοπαρρςστυφθχψω

4.30 Test X005c

```
\input{umtest-preamble}  
\usepackage[sans-style=upright]{unicode-math}  
\setmathfont{Code2001}  
\begin{document}  
\[\mathbfsf\LATINmath\  
\[\mathbfsf\LATINtext\  
\[\mathbfsf\latinmath\  
\[\mathbfsf\latintext\  
\[\mathbfsf{0123456789}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.31 Test X005d

```
\input{umtest-preamble}  
\usepackage[sans-style=upright]{unicode-math}  
\setmathfont{Code2001}  
\begin{document}  
\[\mathbfsf\GREEKmath\  
\[\mathbfsf\GREEKtext\  
\[\mathbfsf\greekmath\  
\[\mathbfsf\greektext\  
\end{document}
```

ΑΒΓΔΕΖΗΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεζηθικιλμνξοπρρςστυφχψω
αβγδεζηθικιλμνξοπρρςστυφχψω

4.32 Test X005e

```
\input{umtest-preamble}  
\usepackage[sans-style=italic]{unicode-math}  
\setmathfont{Code2001}  
\begin{document}  
\[\LATINmathbfsfup\  
\[\LATINmathbfsfit\  
\[\latinmathbfsfup\  
\[\latinmathbfsfit\  
\[\numbersmathbfsfup\  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.33 Test X005f

```
\input{umtest-preamble}  
\usepackage[sans-style=italic]{unicode-math}  
\setmathfont{Code2001}  
\begin{document}  
\[\GREEKmathbfsfup\  
\[\GREEKmathbfsfit\  
\[\greekmathbfsfup\  
\[\greekmathbfsfit\  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικιμνξοπαρρςστυφθχψω
αβγδεεζηθθικιμνξοπαρρςστυφθχψω

4.34 Test X005g

```
\input{umtest-preamble}  
\usepackage[sans-style=italic]{unicode-math}  
\setmathfont{Code2001}  
\begin{document}  
\[\mathbfsf\LATINmath\  
\[\mathbfsf\LATINtext\  
\[\mathbfsf\latinmath\  
\[\mathbfsf\latintext\  
\[\mathbfsf{0123456789}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.35 Test X005h

```
\input{umtest-preamble}  
\usepackage[sans-style=italic]{unicode-math}  
\setmathfont{Code2001}  
\begin{document}  
\[\mathbfsf\GREEKmath\  
\[\mathbfsf\GREEKtext\  
\[\mathbfsf\greekmath\  
\[\mathbfsf\greektext\  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικιμνξοπαρρςστυφφχψω
αβγδεεζηθθικιμνξοπαρρςστυφφχψω

4.36 Test X005i

```
\input{umtest-preamble}  
\usepackage[sans-style=literal]{unicode-math}  
\setmathfont{Code2001}  
\begin{document}  
\[ \mathbf{fup} \]  
\[ \mathbf{fit} \]  
\[ \mathbf{fup} \]  
\[ \mathbf{fit} \]  
\[ \mathbf{fup} \]  
\[ \mathbf{fit} \]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.37 Test X005j

```
\input{umtest-preamble}  
\usepackage[sans-style=literal]{unicode-math}  
\setmathfont{Code2001}  
\begin{document}  
\[ \mathbf{fup} \]  
\[ \mathbf{fit} \]  
\[ \mathbf{fup} \]  
\[ \mathbf{fit} \]  
\end{document}
```

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεζηθικλμνξοπρρςστυφθχψω
αβγδεζηθικλμνξοπρρςστυφθχψω

4.38 Test X005k

```
\input{umtest-preamble}  
\usepackage[sans-style=literal]{unicode-math}  
\setmathfont{Code2001}  
\begin{document}  
\[ \mathbf{fup} \]  
\[ \mathbf{fit} \]  
\[ \mathbf{fup} \]  
\[ \mathbf{fit} \]  
\[ \mathbf{fup} \]  
\[ \mathbf{fit} \]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789

4.39 Test X005l

```
\input{umtest-preamble}
\usepackage[sans-style=literal]{unicode-math}
\setmathfont{Code2001}
\begin{document}
\[\mathbfsf\GREEKmath\]
\[\mathbfsf\GREEKtext\]
\[\mathbfsf\greekmath\]
\[\mathbfsf\greektext\]
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικιλμνξοπαρρςστυφφχψω
αβγδεεζηθθικιλμνξοπαρρςστυφφχψω

4.40 Test X010a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\mathscr{LATINtext}\]
\[\mathscr{latintext}\]
\[\mathscr{LATInmath}\]
\[\mathscr{latinmath}\]
\end{document}
```

ΑΒCDEFGHIJJKLMNOPQRSTUvwxyz
αbcdefghijklmnopqrstuvwxyz
ΑΒCDEFGHIJJKLMNOPQRSTUvwxyz
αbcdefghijklmnopqrstuvwxyz

4.41 Test X010b

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\LATINmathscr\]
\[\latinmathscr\]
\[\reservedmathscr\]
\end{document}
```

ΑΒCDEFGHIJJKLMNOPQRSTUvwxyz
αbcdefghijklmnopqrstuvwxyz
␣␣␣␣␣␣␣␣ ␣␣␣

4.42 Test X010c

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathfrak{\LATINtext}\]  
\[\mathfrak{\latintext}\]  
\[\mathfrak{\LATINmath}\]  
\[\mathfrak{\latinmath}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

4.43 Test X010d

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\LATINmathfrak{\}]  
\[\latinmathfrak{\}]  
\[\reservedmathfrak{\}]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

????

4.44 Test X011a

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathup{\LATINtext}\]  
\[\mathup{\latintext}\]  
\[\mathup{\LATINmath}\]  
\[\mathup{\latinmath}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

4.45 Test X011b

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathup{\GREEKtext}\]  
\[\mathup{\greektext}\]  
\[\mathup{\GREEKmath}\]  
\[\mathup{\greekmath}\]  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπρρςστυφφχψω
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπρρςστυφφχψω

4.46 Test X012a

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathit{\LATINtext}\]  
\[\mathit{\latintext}\]  
\[\mathit{\LATINmath}\]  
\[\mathit{\latinmath}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

4.47 Test X012b

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathit{\GREEKtext}\]  
\[\mathit{\greektext}\]  
\[\mathit{\GREEKmath}\]  
\[\mathit{\greekmath}\]  
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπρρςστυφφχψω
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθθικλμνξοπρρςστυφφχψω

4.48 Test X013a

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbb{\text{LATINtext}}\]  
\[\mathbb{\text{latinintext}}\]  
\[\mathbb{\text{LATINmath}}\]  
\[\mathbb{\text{latinmath}}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

4.49 Test X013b

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbb{0123456789}\]  
\[\numbersmathbb{\}  
\end{document}
```

0123456789
0123456789

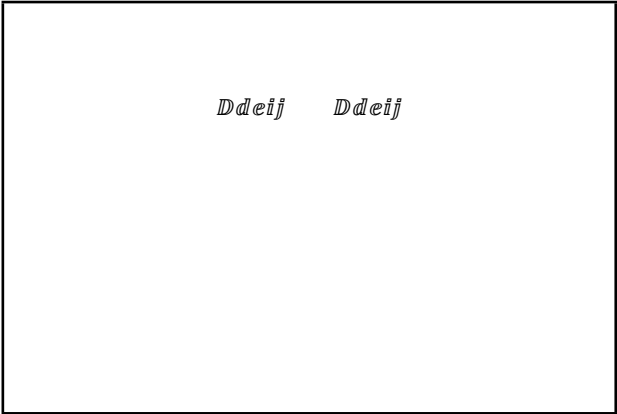
4.50 Test X013c

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\text{LATINmathbb}\]  
\[\text{latinmathbb}\]  
\[\reservedmathbb\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
???????

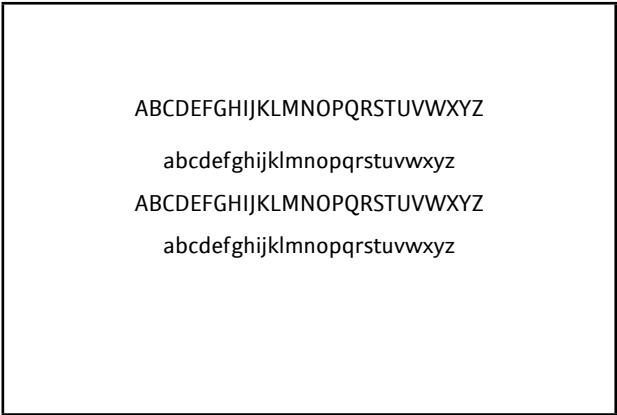
4.51 Test X013e

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbb{it}{Ddei}\qquad\mathbb{it}{Ddei}\]  
\end{document}
```



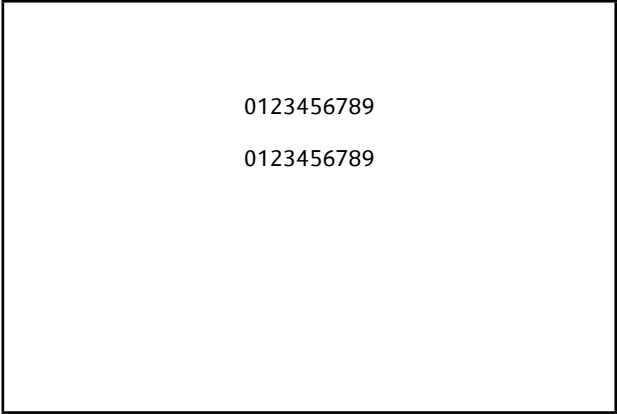
4.52 Test X014a

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathsfup{\LATINText}\]  
\[\mathsfup{\latintext}\]  
\[\mathsfup{\LATINmath}\]  
\[\mathsfup{\latinmath}\]  
\end{document}
```



4.53 Test X014b

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathsfup{0123456789}\]  
\[\numbersmathsfup\]  
\end{document}
```



4.54 Test X014c

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[ \mathsf{up} \]  
\[ \mathsf{up} \]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

4.55 Test X015a

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[ \mathsf{up} \]  
\[ \mathsf{up} \]  
\[ \mathsf{up} \]  
\[ \mathsf{up} \]  
\[ \mathsf{up} \]  
\[ \mathsf{up} \]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

4.56 Test X015b

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[ \mathsf{up} \]  
\[ \mathsf{up} \]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

4.57 Test X016a

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Asana-Math.otf}  
\begin{document}  
\[\mathhtt{\text{LATINtext}}\]  
\[\mathhtt{\text{latintext}}\]  
\[\mathhtt{\text{LATINmath}}\]  
\[\mathhtt{\text{latinmath}}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

4.58 Test X016b

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Asana-Math.otf}  
\begin{document}  
\[\mathhtt{0123456789}\]  
\[\numbersmathtt\]  
\end{document}
```

0123456789
0123456789

4.59 Test X016c

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Asana-Math.otf}  
\begin{document}  
\[\LATINmathtt\]  
\[\latinmathtt\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

4.60 Test X017a

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf{scr}\{\text{LATINtext}\}\]  
\[\mathbf{scr}\{\text{latintext}\}\]  
\[\mathbf{scr}\{\text{LATINmath}\}\]  
\[\mathbf{scr}\{\text{latinmath}\}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

4.61 Test X017b

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\text{LATINmathbfscr}\]  
\[\text{latinmathbfscr}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

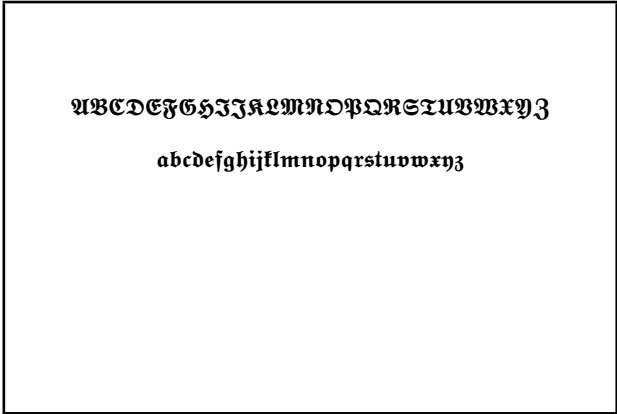
4.62 Test X017c

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[\mathbf{frak}\{\text{LATINtext}\}\]  
\[\mathbf{frak}\{\text{latintext}\}\]  
\[\mathbf{frak}\{\text{LATINmath}\}\]  
\[\mathbf{frak}\{\text{latinmath}\}\]  
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

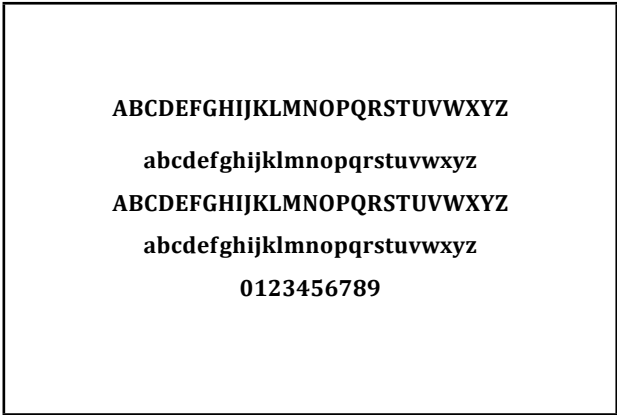
4.63 Test X017d

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[ \mathbb{A} \]  
\[ \mathbb{a} \]  
\end{document}
```



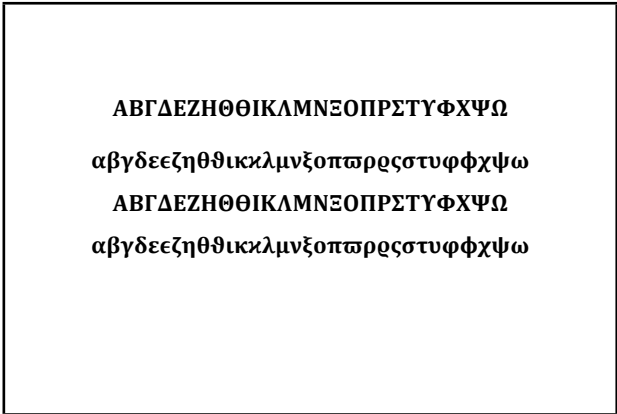
4.64 Test X018a

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[ \mathbf{A} \]  
\[ \mathbf{a} \]  
\[ \mathbf{A} \]  
\[ \mathbf{a} \]  
\[ \mathbf{0123456789} \]  
\end{document}
```



4.65 Test X018b

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Cambria Math}  
\begin{document}  
\[ \mathbf{A} \]  
\[ \mathbf{a} \]  
\[ \mathbf{A} \]  
\[ \mathbf{a} \]  
\end{document}
```



4.66 Test X019a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\mathbf{fit}\{\text{LATINtext}\}\]
\[\mathbf{fit}\{\text{latintext}\}\]
\[\mathbf{fit}\{\text{LATINmath}\}\]
\[\mathbf{fit}\{\text{latinmath}\}\]
\[\mathbf{fit}\{0123456789\}\]
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxy
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxy
0123456789

4.67 Test X019b

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\mathbf{fit}\{\text{GREEKtext}\}\]
\[\mathbf{fit}\{\text{greektext}\}\]
\[\mathbf{fit}\{\text{GREEKmath}\}\]
\[\mathbf{fit}\{\text{greekmath}\}\]
\end{document}
```

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθικλμνξοπρρςστυφχψω
ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθικλμνξοπρρςστυφχψω

4.68 Test X020a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\mathbf{fsfit}\{\text{LATINtext}\}\]
\[\mathbf{fsfit}\{\text{latintext}\}\]
\[\mathbf{fsfit}\{\text{LATINmath}\}\]
\[\mathbf{fsfit}\{\text{latinmath}\}\]
\[\mathbf{fsfit}\{0123456789\}\]
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxy
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxy
0123456789

4.69 Test X020b

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{STIXGeneral-Bold}
\begin{document}
\[\mathbfsup{\GREEKtext}\]
\[\mathbfsup{\greektext}\]
\[\mathbfsup{\GREEKmath}\]
\[\mathbfsup{\greekmath}\]
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθδικκλμνξοπωρρςστυφφχψω
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθδικκλμνξοπωρρςστυφφχψω

4.70 Test X021a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\mathbfsfit{\LATINtext}\]
\[\mathbfsfit{\latintext}\]
\[\mathbfsfit{\LATINmath}\]
\[\mathbfsfit{\latinmath}\]
\[\mathbfsfit{0123456789}\]
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

4.71 Test X021b

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{STIXGeneral-BoldItalic}
\begin{document}
\[\mathbfsfit{\GREEKtext}\]
\[\mathbfsfit{\greektext}\]
\[\mathbfsfit{\GREEKmath}\]
\[\mathbfsfit{\greekmath}\]
\end{document}
```

ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθδικκλμνξοπωρρςστυφφχψω
ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ
αβγδεεζηθδικκλμνξοπωρρςστυφφχψω

4.72 Test X030a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{FreeSerif}
\begin{document}
\[ \mathcal{F} \]
\[ \mathbf{F} \]
\[ \mathit{F} \]
\[ \mathbf{F} \]
\end{document}
```

 \mathcal{F}
 \mathbf{F}
 F
 \mathbf{F}

4.73 Test X031a

```
\input{umtest-preamble}
\usepackage[nabla=upright]{unicode-math}
\setmathfont{Free Serif}
\begin{document}
\[ \nabla \quad \mathbf{\nabla} \quad \mathit{\nabla} \]
\[ \nabla \quad \mathbf{\nabla} \quad \mathbf{\nabla} \]
\[ \nabla \quad \mathbf{\nabla} \quad \mathbf{\nabla} \]
\[ \mathbf{\nabla} \quad \mathbf{\nabla} \quad \mathbf{\nabla} \]
\end{document}
```

 $\nabla \quad \mathbf{\nabla} \quad \mathit{\nabla}$
 $\nabla \quad \mathbf{\nabla} \quad \mathbf{\nabla}$
 $\nabla \quad \mathbf{\nabla}$
 $\mathbf{\nabla} \quad \mathbf{\nabla}$
 $\mathbf{\nabla} \quad \mathbf{\nabla}$

4.74 Test X031b

```
\input{umtest-preamble}
\usepackage[nabla=italic]{unicode-math}
\setmathfont{Free Serif}
\begin{document}
\[ \nabla \quad \mathbf{\nabla} \quad \mathit{\nabla} \]
\[ \nabla \quad \mathbf{\nabla} \quad \mathbf{\nabla} \]
\[ \nabla \quad \mathbf{\nabla} \quad \mathbf{\nabla} \]
\[ \mathbf{\nabla} \quad \mathbf{\nabla} \quad \mathbf{\nabla} \]
\end{document}
```

 $\nabla \quad \mathbf{\nabla} \quad \mathit{\nabla}$
 $\nabla \quad \mathbf{\nabla} \quad \mathbf{\nabla}$
 $\nabla \quad \mathbf{\nabla}$
 $\mathbf{\nabla} \quad \mathbf{\nabla}$
 $\mathbf{\nabla} \quad \mathbf{\nabla}$

4.75 Test X031c

```
\input{umtest-preamble}
\usepackage[nabla=literal]{unicode-math}
\setmathfont{Free Serif}
\begin{document}
\[\nabla \quad \nabla \quad \nabla\]
\[\nabla \quad \mathbf{\nabla} \quad \mathbf{sf{\nabla}}\]
\[\mathup{\nabla} \quad \mathit{\nabla}\]
\[\mathbfup{\nabla} \quad \mathbf{fit{\nabla}}\]
\[\mathbfsfup{\nabla} \quad \mathbf{fsfit{\nabla}}\]
\end{document}
```

$\nabla \quad \nabla \quad \nabla$
 $\nabla \quad \nabla \quad \nabla$
 $\nabla \quad \nabla$
 $\nabla \quad \nabla$
 $\nabla \quad \nabla$

4.76 Test X032a

```
\input{umtest-preamble}
\usepackage[partial=upright]{unicode-math}
\setmathfont{Code2001}
\begin{document}
\[\partial \quad \partial \quad \partial\]
\[\partial \quad \mathbf{\partial} \quad \mathbf{sf{\partial}}\]
\[\mathup{\partial} \quad \mathit{\partial}\]
\[\mathbfup{\partial} \quad \mathbf{fit{\partial}}\]
\[\mathbfsfup{\partial} \quad \mathbf{fsfit{\partial}}\]
\end{document}
```

$\partial \quad \partial \quad \partial$
 $\partial \quad \partial \quad \partial$
 $\partial \quad \partial$
 $\partial \quad \partial$
 $\partial \quad \partial$

4.77 Test X032b

```
\input{umtest-preamble}
\usepackage[partial=italic]{unicode-math}
\setmathfont{Code2001}
\begin{document}
\[\partial \quad \partial \quad \partial\]
\[\partial \quad \mathbf{\partial} \quad \mathbf{sf{\partial}}\]
\[\mathup{\partial} \quad \mathit{\partial}\]
\[\mathbfup{\partial} \quad \mathbf{fit{\partial}}\]
\[\mathbfsfup{\partial} \quad \mathbf{fsfit{\partial}}\]
\end{document}
```

$\partial \quad \partial \quad \partial$
 $\partial \quad \partial \quad \partial$
 $\partial \quad \partial$
 $\partial \quad \partial$
 $\partial \quad \partial$

4.78 Test X032c

```
\input{umtest-preamble}
\usepackage[partial=literal]{unicode-math}
\setmathfont{Code2001}
\begin{document}
\[\partial \quad \partial \quad \partial \backslash]
\[\partial \quad \mathbf{\partial} \quad \mathbf{sf{\partial}} \backslash]
\[\mathup{\partial} \quad \mathit{\partial} \backslash]
\[\mathbf{fup{\partial}} \quad \mathbf{fit{\partial}} \backslash]
\[\mathbf{fsfup{\partial}} \quad \mathbf{fsfit{\partial}} \backslash]
\end{document}
```

$\partial\partial$ $\partial\partial$ $\partial\partial$
 $\partial\partial$ $\partial\partial$ $\partial\partial$
 $\partial\partial$ $\partial\partial$
 $\partial\partial$ $\partial\partial$
 $\partial\partial$ $\partial\partial$

4.79 Test X033a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\begin{document}
\setmathfont[math-style=TeX]{Free Serif}
\[1\!\!\!\quad 2\!\!\!\quad]
\[\!\!\!\mathup{1\!\!\!\quad}\!\!\!\quad\!\!\!\mathup{2\!\!\!\quad}\!\!\!\quad]
\[\!\!\!\mathit{1\!\!\!\quad}\!\!\!\quad\!\!\!\mathit{2\!\!\!\quad}\!\!\!\quad]
\setmathfont[math-style=upright]{Free Serif}
\[1\!\!\!\quad 2\!\!\!\quad]
\[\!\!\!\mathup{1\!\!\!\quad}\!\!\!\quad\!\!\!\mathup{2\!\!\!\quad}\!\!\!\quad]
\[\!\!\!\mathit{1\!\!\!\quad}\!\!\!\quad\!\!\!\mathit{2\!\!\!\quad}\!\!\!\quad]
\end{document}
```

\mathcal{U}	\mathcal{U}
\mathcal{I}	\mathcal{I}
\mathcal{U}	\mathcal{U}
\mathcal{I}	\mathcal{I}
\mathcal{I}	\mathcal{I}
\mathcal{U}	\mathcal{U}

4.80 Test X102a

```
\input{umtest-preamble}
\usepackage[slash-delimiter=frac]{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[ \left.\left[\begin{array}{cc}
a & b \\ c & d
\end{array}\right]\right|
\middle/
\left[\begin{array}{cc}
1 & 1 \\ 1 & 0
\end{array}\right]\right].
\]
\end{document}
```

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} / \begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix}$$

4.81 Test X150a

```
\input{umtest-preamble}
\usepackage{amsmath,unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\centerline{$\int\!\!\!\int\!\!\!\int\!\!\!\int$}
\[ \int\!\!\!\int\!\!\!\int\!\!\!\int \]
\end{document}
```

$$\int\!\!\!\int\!\!\!\int\!\!\!\int$$
$$\int\!\!\!\int\!\!\!\int\!\!\!\int$$

4.82 Test X202a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[a\colon b\qquad a\colon b
\qquad a^{2236}b\]
\end{document}
```

$$a\colon b \qquad a\colon b \qquad a\colon b$$

4.83 Test X202b

```
\input{umtest-preamble}
\usepackage[colon=literal]{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[a\colon b\qquad a\colon b
\qquad a^{2236}b\]
\end{document}
```

$$a\colon b \qquad a\colon b \qquad a\colon b$$

4.84 Test X203a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[a-b\]
\[a\minus b\]
\end{document}
```

$$a - b$$

$$a - b$$

4.85 Test X206a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[A+B+\dots+Z\]
\[(A+B+\dots)\]
\[(A+B+\cdots)\]
\end{document}
```

$$A + B + \dots + Z$$

$$(A + B + \dots)$$

$$(A + B + \cdots)$$

4.86 Test X206b

```
\input{umtest-preamble}
\usepackage{amsmath}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[A+B+\dots+Z\]
\[(A+B+\dots)\]
\[(A+B+\cdots)\]
\end{document}
```

$$A + B + \dots + Z$$

$$(A + B + \dots)$$

$$(A + B + \cdots)$$

4.87 Test X206c

```
\input{umtest-preamble}
\usepackage{amsmath}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[ a\percent b \,% c \]
\[ a\mathdollar b \,$ c \]
\[ a\ampersand b \,& c \]
\[ a\octothorpe b \,# c \]
\end{document}
```

$a\%b\%c$
 $a\$b\c
 $a\&b\&c$
 $a\#b\#c$

4.88 Test X401a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{XITS Math}
\begin{document}
```

$x = 1.23 \quad x = 1, 23$

```
\setmathfont{Cambria Math}

\[ x=1.23 \quad x=1,23 \]

\end{document}
```

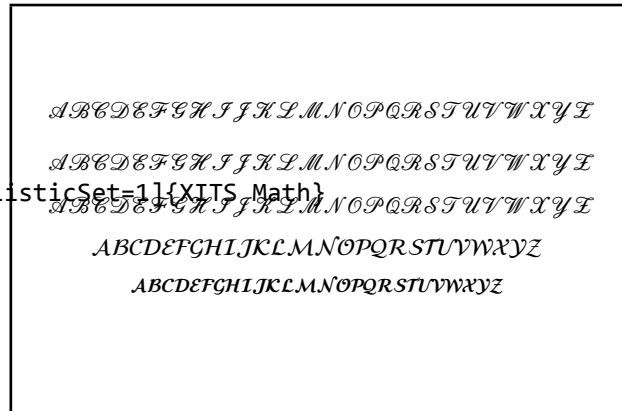
4.89 Test X502a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{STIXGeneral}
\setmathfont
  [range={\mathit,\mathsf,\mathscr}]
  {STIXGeneral-Italic}
\setmathfont
  [range={\mathbfup,\mathbffrak,
    \mathbfsfup}]
  {STIXGeneral-Bold}
\setmathfont
  [range={\mathbfit,\mathbfsfit,\mathbfscf}]
  {STIXGeneral-BoldItalic}
\begin{document}
\[ \mathit{A} \mathup{A}
   \mathsfup{A} \mathsfit{A} \]
\[ \mathscr{A} \mathfrak{A} \mathbb{A} \]
\[ \mathbfup{A} \mathbfit{A}
   \mathbfsfup{A} \mathbfsfit{A} \]
\[ \mathbfscf{A} \mathbffrak{A} \]
\end{document}
```

$AAAA$
 \mathscr{A}
 $AAAA$
 \mathscr{A}

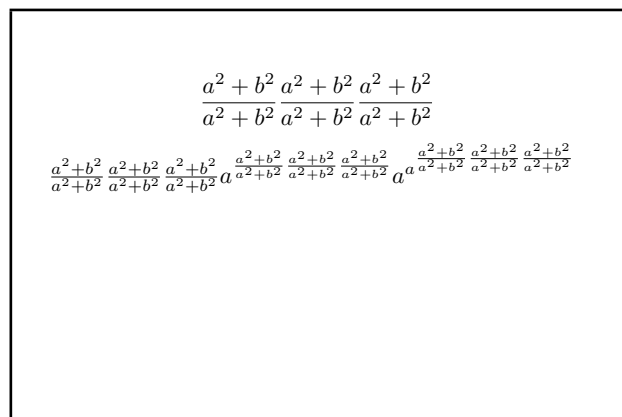
4.90 Test X503a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\begin{document}
\setmathfont{XITS Math}
\[
\mathscr{\LATINText}
\]
\[
\mathcal{\LATINText}
\]
\setmathfont[range={\mathcal,\mathbfcal},StylisticSet=1]{XITS Math}
\[
\mathscr{\LATINText}
\]
\[
\mathcal{\LATINText}
\]
\footnotesize
\[
\mathbfcal{\LATINText}
\]
\end{document}
```



4.91 Test X601a

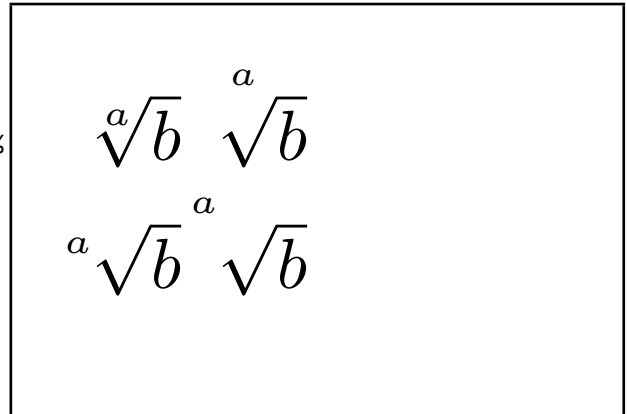
```
\input{umtest-preamble}
\usepackage{mathtools}
\begin{document}
\[
\frac{a^2 + b^2}{a^2 + b^2}
\frac{\cramped{a^2 + b^2}}{\cramped{a^2 + b^2}}
\frac{a^2 + b^2}{\cramped{a^2 + b^2}}
\]
\[
\frac{a^2 + b^2}{a^2 + b^2}
\frac{\cramped{a^2 + b^2}}{\cramped{a^2 + b^2}}
\frac{a^2 + b^2}{\cramped{a^2 + b^2}}
a^{\frac{a^2 + b^2}{a^2 + b^2}}
a^{\frac{\cramped{a^2 + b^2}}{\cramped{a^2 + b^2}}}
a^{\frac{a^2 + b^2}{\cramped{a^2 + b^2}}}
\]
\end{document}
```



4.92 Test X604a

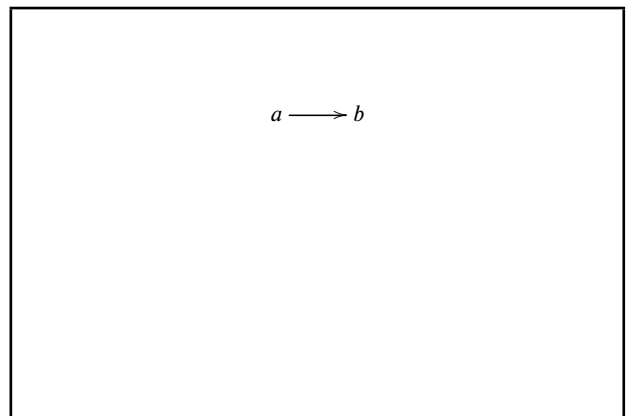
```
\input{umtest-preamble}
\usepackage{amsmath}
\usepackage{graphicx}
\newcommand*{\test}[1]{%
  \parbox[b][50pt][50pt]{\scalebox{3}{\$#1\$}}%
}
\begin{document}
\test{\sqrt{a}{b}}
\test{\sqrt{\uproot{10}a}{b}}

\test{\sqrt[\leftroot{10}a]{b}}
\test{\sqrt[\leftroot{10}\uproot{10}a]{b}}
\end{document}
```



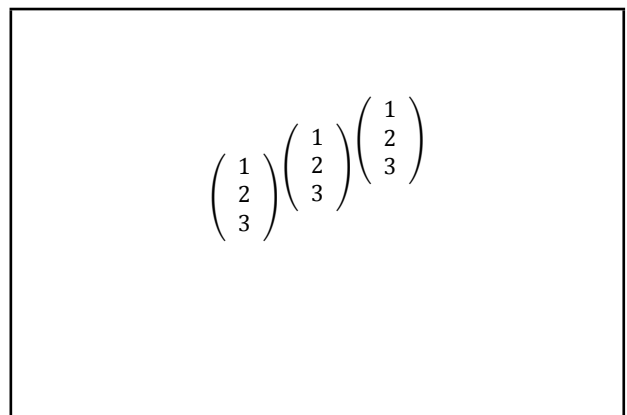
4.93 Test X610f

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{XITS Math}
\usepackage[all,pdf]{xy}
\begin{document}
\[
\xymatrix{a \ar[r] & b}
\]
\end{document}
```



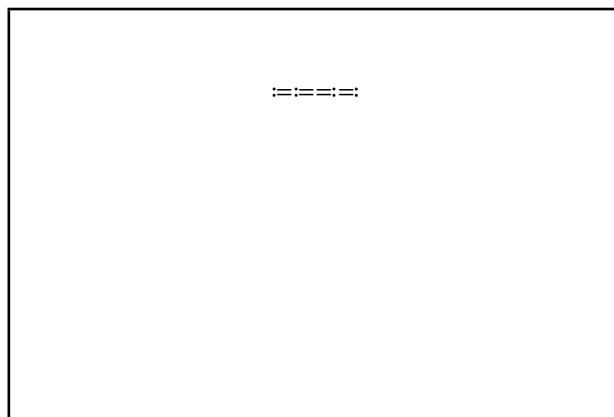
4.94 Test X620b

```
\input{umtest-preamble}
\usepackage{unicode-math}
\usepackage{delarray}
\setmathfont{Cambria Math}
\begin{document}
\[
\begin{array}[t]({c}) 1\!\!2\!\!3 \end{array}
\begin{array}[c]({c}) 1\!\!2\!\!3 \end{array}
\begin{array}[b]({c}) 1\!\!2\!\!3 \end{array}
\]
\end{document}
```



4.95 Test X650a

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\usepackage{mathtools}  
\setmathfont{Cambria Math}  
\begin{document}  
\[  
\coloneq  
\coloneqq  
\eqcolon  
\eqqcolon  
\]  
\end{document}
```



4.96 Test X650b

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\usepackage{colonequals}  
\setmathfont{Cambria Math}  
\begin{document}  
\[  
\coloneq  
\colonequals  
\eqcolon  
\equalscolon  
\]  
\end{document}
```

