

The unicode-math test suite

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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.

1 Test 001a

```
\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 Test 001b

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

3 Test 001c

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

4 Test 001d

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

5 Test 002a

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

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αβγδεεζηθικκλμνξοπωρρςστυφφχψω

6 Test 002b

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

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αβγδεεζηθικκλμνξοπρρςστυφφχψω

7 Test 002c

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

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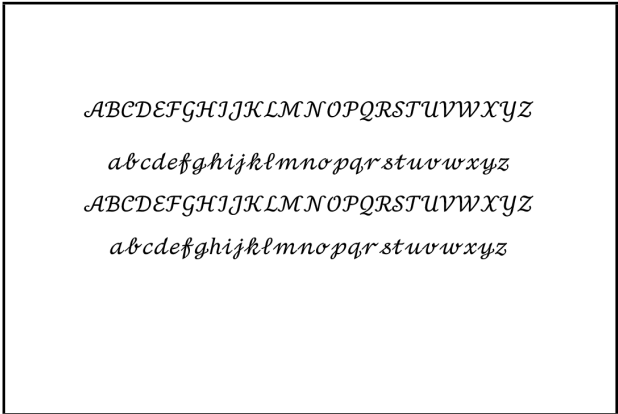
8 Test 002d

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

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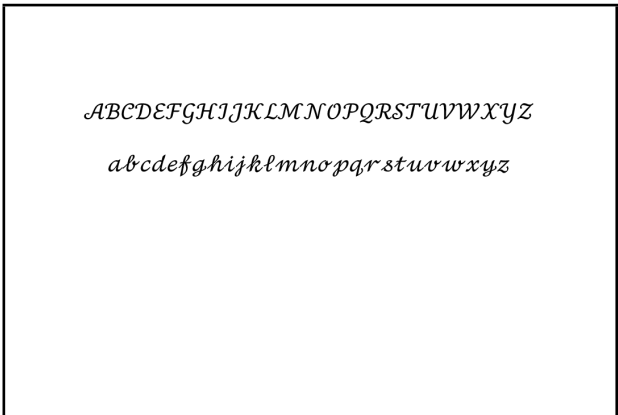
9 Test 010a

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



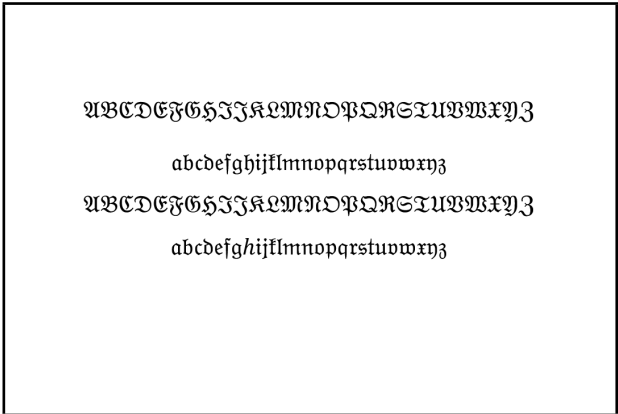
10 Test 010b

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



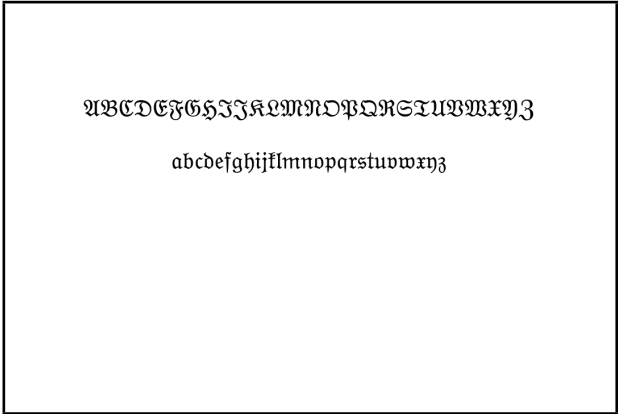
11 Test 010c

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



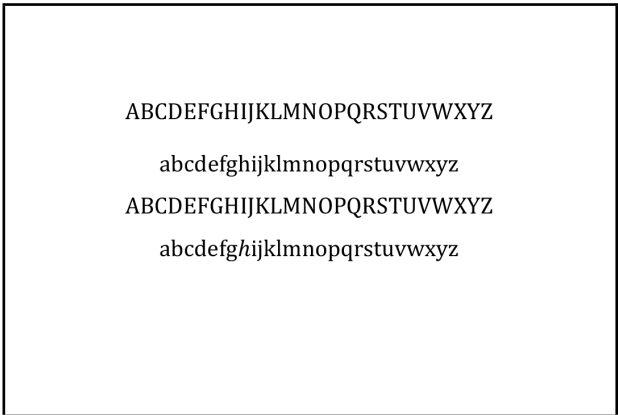
12 Test 010d

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



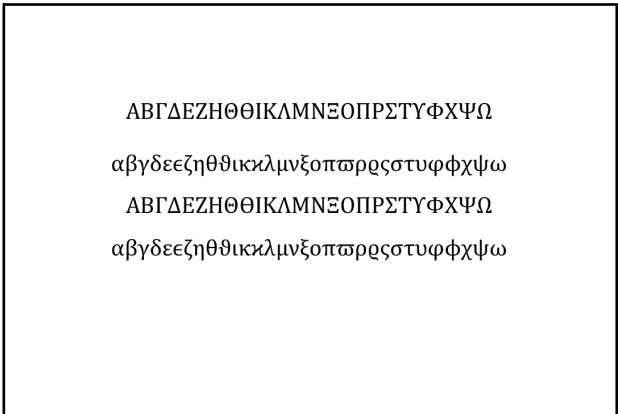
13 Test 011a

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



14 Test 011b

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



15 Test 012a

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

16 Test 012b

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

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17 Test 013a

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ÂB̂D̂ÊF̂ĜĤÎĴK̂L̂M̂N̂ÔP̂Q̂R̂ŜT̂ÛV̂ŴX̂ŶẐ
abcdefghijklmnopqrstuvwxyz

18 Test 013b

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

0123456789

0123456789

19 Test 013c

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

20 Test 014a

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ

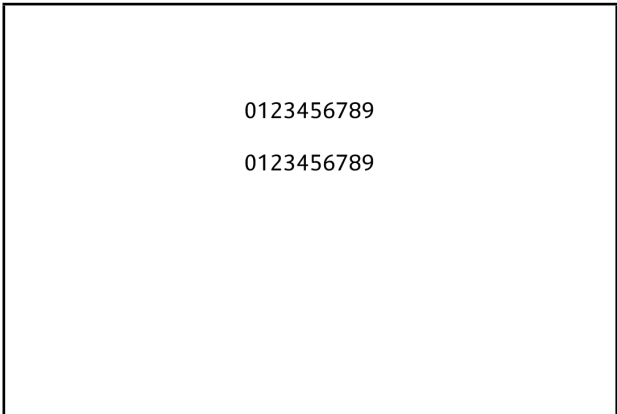
abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

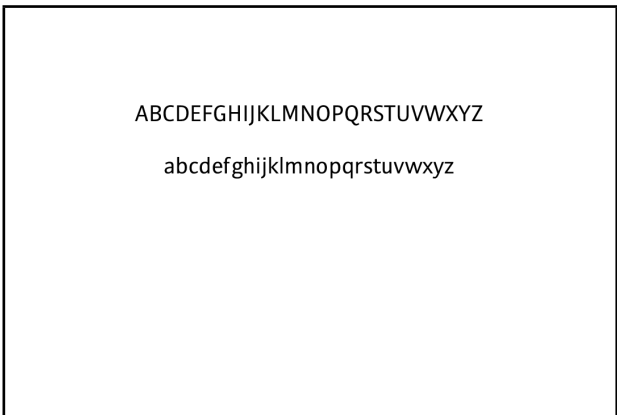
21 Test 014b

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



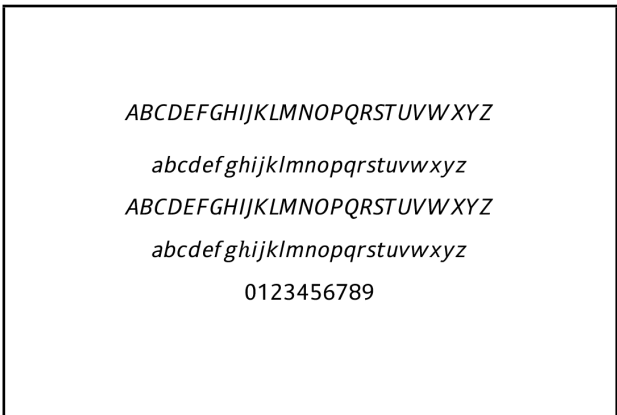
22 Test 014c

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



23 Test 015a

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



24 Test 015b

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

25 Test 016a

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

26 Test 016b

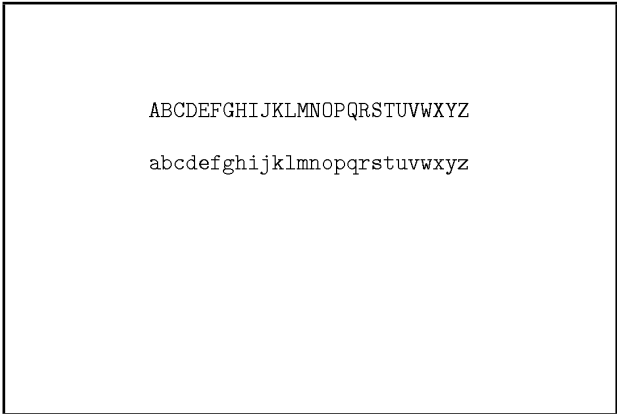
```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Asana Math}
\begin{document}
\[\text{\mathtt{0123456789}}\]
\[\text{\numbersmathtt}\]
\end{document}
```

0123456789

0123456789

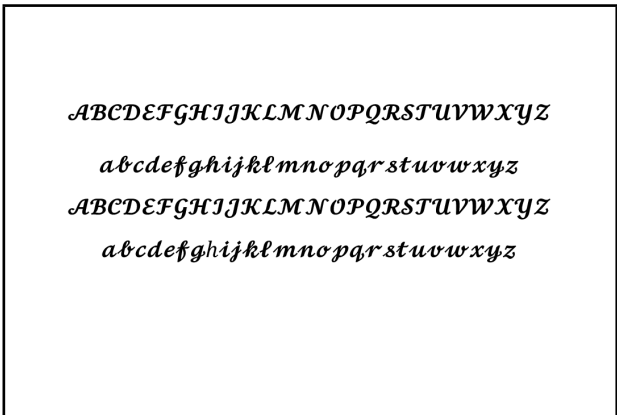
27 Test 016c

```
\input{umtest-preamble}  
\usepackage{unicode-math}  
\setmathfont{Asana Math}  
\begin{document}  
\[ \mathrm{ABCDEFGHIJKLMNOPQRSTUVWXYZ} \]  
\[ \mathrm{abcdefghijklmnopqrstuvwxyz} \]  
\end{document}
```



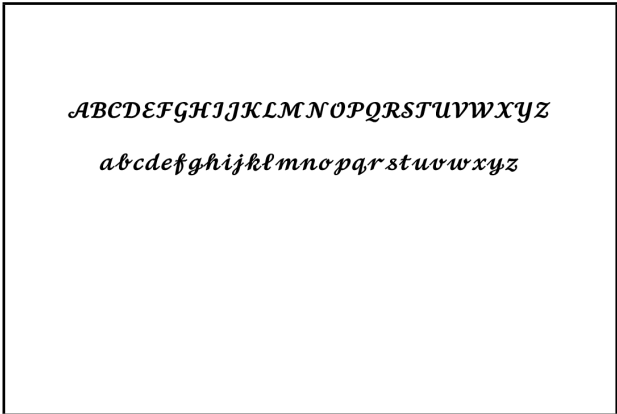
28 Test 017a

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



29 Test 017b

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



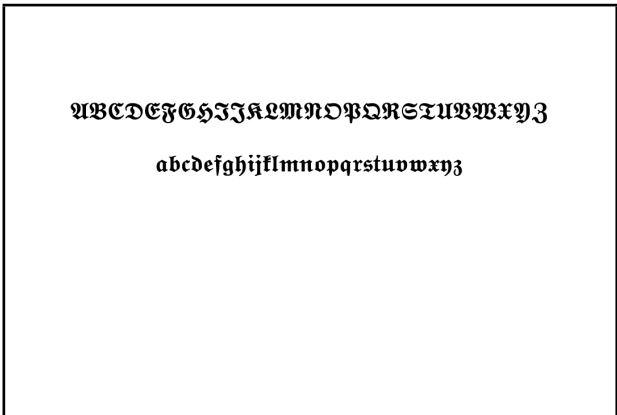
30 Test 017c

```
\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}
```



31 Test 017d

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



32 Test 018a

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



33 Test 018b

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

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34 Test 019a

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

35 Test 019b

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

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36 Test 020a

```
\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

37 Test 020b

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

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38 Test 021a

```
\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

39 Test 021b

[illegible]

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αβγδεεζηθθικκλμνξοππρρςςττυφφχψω

40 Test 100a

```
\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)
\end{document}
```

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

41 Test 100b

```
\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
\end{document}
```

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

42 Test 100c

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\left\{\left\{\left\{\left\{\left\{\left\{\left\{\right\}\right\}\right\}\right\}\right\}\right\}^2\right\}\right\}^2\right\}\right\}^2\right\}\right\}^2\right\}
\end{document}
```

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

43 Test 100d

```
\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| \right|^2 \right|^2 \right|^2 \right|^2 \right|^2 \right|
\left| \left| \left| \left| \left| \left| \right|^2 \right|^2 \right|^2 \right|^2 \right|^2 \right|
\left| \left| \left| \left| \left| \left| \right|^2 \right|^2 \right|^2 \right|^2 \right|^2 \right|
\end{document}
```

$$\left| \left| \left| \left| \left| \left| x^2 \right|^2 \right|^2 \right|^2 \right|^2 \right|^2 \right|^2$$

$$\left| \left| \left| \left| \left| \left| x^2 \right|^2 \right|^2 \right|^2 \right|^2 \right|^2 \right|^2$$

44 Test 100e

```
\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
\[ \left\Vert \left\Vert \left\Vert \left\Vert \left\Vert \left\Vert
\right\Vert^2 \right\Vert^2 \right\Vert^2 \right\Vert^2 \right\Vert^2
\end{document}
```

[illegible]

[illegible]

45 Test 150a

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

$$\begin{array}{ccc} \int & \int \cdots \int \\ \int & \int \cdots \int \end{array}$$

46 Test 200a

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

$$[x'''] \quad [x'''''] \quad [x'] \quad [x'''] \quad [x'''''] \quad [x'] \quad [x'''] \quad [x''''']$$

47 Test 201a

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

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

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

48 **Test 202a**

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

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

49 **Test 202b**

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

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

50 **Test 203a**

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

$$a - b$$
$$a - b$$

51 Test 204a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\setlength\parskip{12pt}
\begin{document}
$ x \quad $ $ x \quad $ $ x \quad $ $ x \quad $ $ $ x \quad $ $ $ x \quad $ $ $ x
$ x \quad $ $ x \quad $ $ x \quad $ $ x \quad $ $ $ x \quad $ $ $ x \quad $ $ $ x
$ x \quad \quad \quad ^2$ $ x \quad \quad \quad ^2$ $ x \quad ^2$ $ x^2 \quad $
$ x \quad ^2 \quad $
\end{document}
```

 $x_{012} \ x_{123} \ x_{234} \ x_{345} \ x_{456} \ x_{567} \ x_{678} \ x_{789} \ x_{89+}$
$$x_{9+-} \ x_{+-(} \ x_{-(=} \ x_{(=)} \ x_{=)a} \ x_{)ae} \ x_{aeo} \ x_{eox} \ x_{ox0} \ x_{x01}$$
$$x^{0i+)n2} \quad x^{i+)n2} \quad x^{n2} \quad x^{2i+)n}$$
$$x_{34}^{2i+n}$$

52 Test 205a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont{Cambria Math}
\begin{document}
\[\iiint_V]
\removenolimits\iiint
\[\iiint_V]
\addnolimits\iiint
\[\iiint_V]
\end{document}
```

$$\iiint_V$$
$$\iiint_V$$
$$\iiint_V$$

53 Test 500a

```
\input{umtest-preamble}
\usepackage{unicode-math}
\setmathfont[Colour=000000]{Cambria Math}
\setmathfont[Range={\mathop}, Colour=FF0000]{Cambria Math}
\setmathfont[Range={\equal}, Colour=009900]{Cambria Math}
\setmathfont[Range={\mathopen,\mathclose},
              Colour=0000FF]{Cambria Math}
\setlength\parskip{12pt}
\begin{document}
\[\begin{aligned}
F(s)&=\mathscr{L}\left\{f(t)\right\}=\\
&\int_0^{\infty}\mathop{e}^{-st}f(t)\,\mathop{d}t
\end{aligned}\]
```

$$F(s) = \mathcal{L}\{f(t)\} = \int_0^{\infty} e^{-st} f(t) dt$$