

# 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}
\[\backslash\mathrm{LATINtext}\]
\[\backslash\mathrm{latintext}\]
\[\backslash\mathrm{LATINmath}\]
\[\backslash\mathrm{latinmath}\]
\end{document}
```

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

### 4 Test 001d

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

### 5 Test 002a

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

ΑΒΓΔΕΖΗΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ

αβγδεζηθικλμνξοπρρςστυφφχψω

ΑΒΓΔΕΖΗΘΙΚΑΜΝΞΟΠΡΣΤΥΦΧΨΩ

αβγδεζηθικλμνξοπρρςστυφφχψω

## 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}
```

*ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*  
*αβγδεεζηθικκλμνξοπρρςστυφφχψω*  
*ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*  
*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}
```

*ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*  
*αβγδεεζηθικκλμνξοπρρςστυφφχψω*  
*ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*  
*αβγδεεζηθικκλμνξοπρρςστυφφχψω*

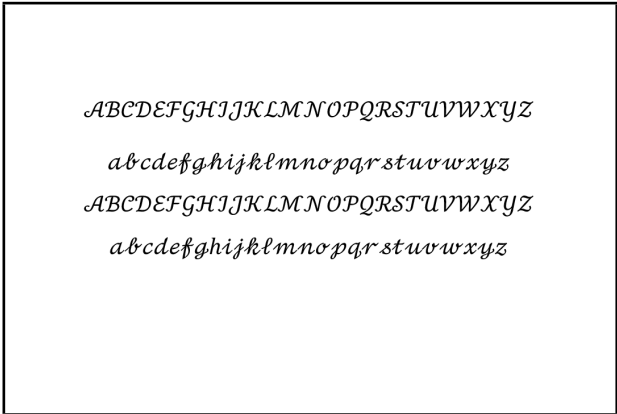
## 8 Test 002d

```
\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}
```

*ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*  
*αβγδεεζηθικκλμνξοπρρςστυφφχψω*  
*ΑΒΓΔΕΖΗΘΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ*  
*αβγδεεζηθικκλμνξοπρρςστυφφχψω*

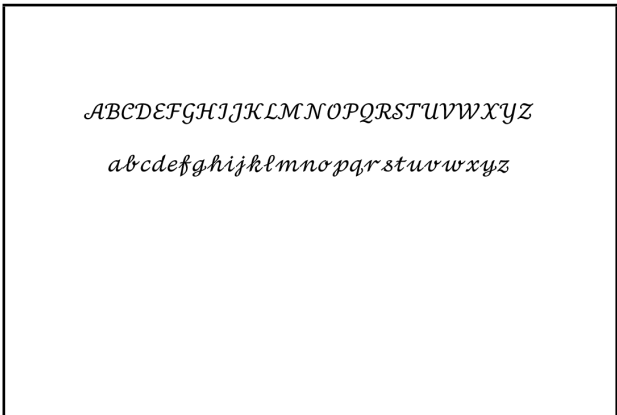
9 Test 010a

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



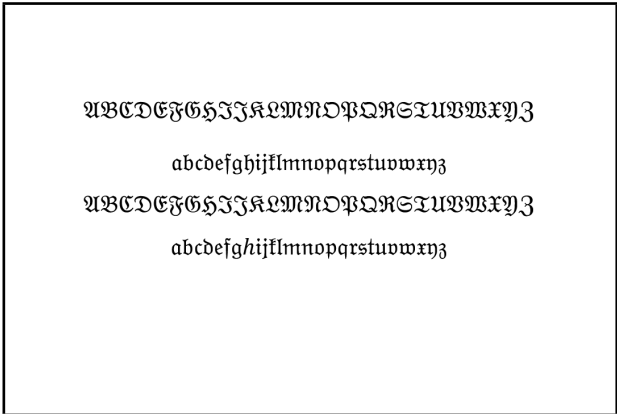
10 Test 010b

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



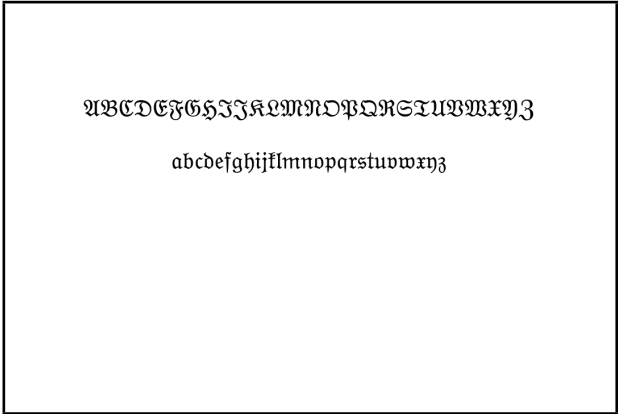
11 Test 010c

```
\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}
```



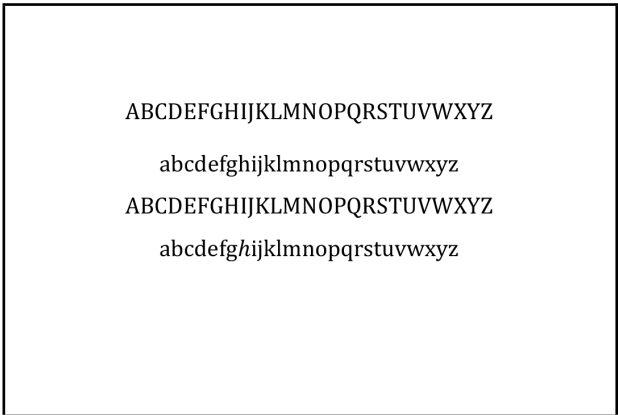
## 12 Test 010d

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



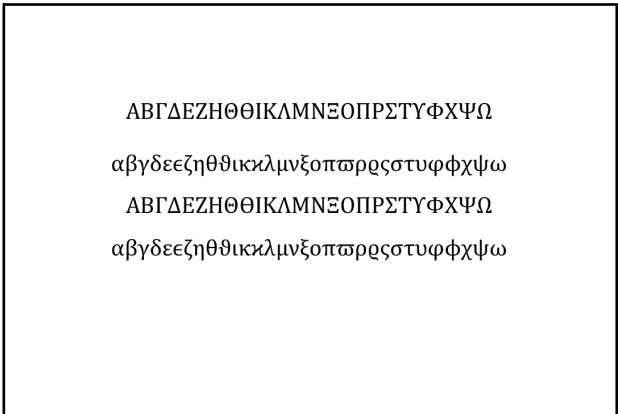
## 13 Test 011a

```
\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}
```

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ  
αβγδεζηθικλμνξοπρρςστυφφχψω  
ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ  
αβγδεζηθικλμνξοπρρςστυφφχψω

# 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  
ABDEFGHIJKLMOOOOSTUVWXYZ  
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

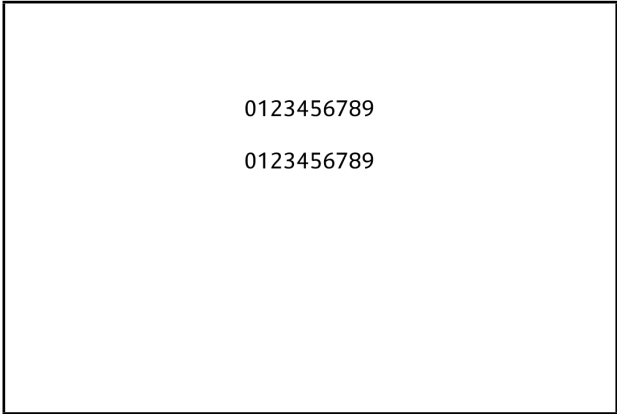
abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

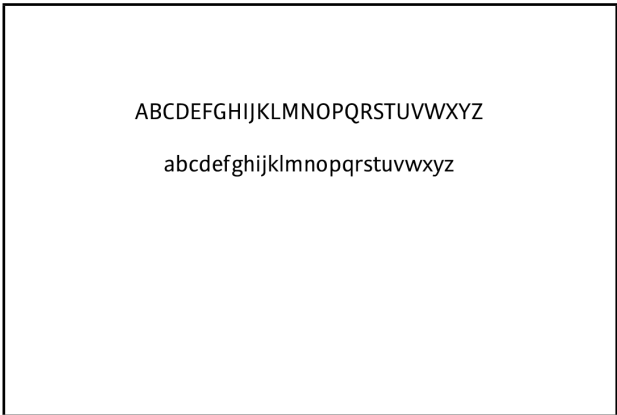
## 21 Test 014b

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



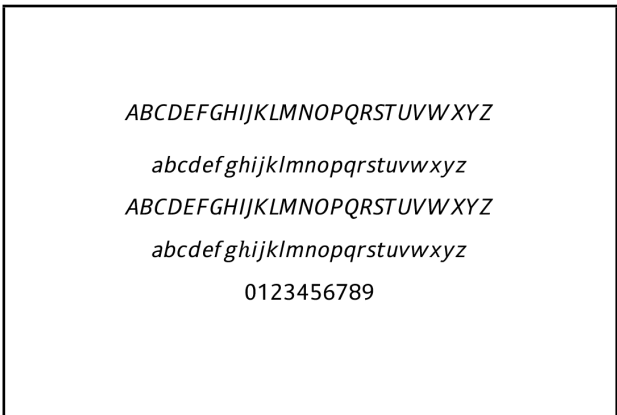
## 22 Test 014c

```
\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}
\[\backslash\mathrm{LATINmathsf}\backslash\]
\[\backslash\mathrm{latinmathsf}\backslash\]
\end{document}
```

*ABCDEFGHIJKLMNOPQRSTUVWXYZ*

*abcdefghijklmnopqrstuvwxyz*

25    Test 016a

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

abcdefghijklmnopqrstuvwxyz

26    Test 016b

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

0123456789

0123456789

## 27 Test 016c

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

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz

## 28 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}
```

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

## 29 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}
```

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

## 30 Test 100c

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

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

## 31 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\vert \left\vert \left\vert \left\vert \left\vert \left\vert x^2 \right\vert^2 \right\vert^2 \right\vert^2 \right\vert^2 \right\vert^2 \right]
\end{document}
```

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

## 32 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}
```

### 33 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}
```

$$\int \int \dots \int$$

## 34 Test 200a

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

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

## 35 Test 201a

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

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

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

### 36 Test 202a

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

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

### 37 Test 202b

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

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

### 38 Test 203a

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

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

## 39 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
$
$x \quad \quad ^2$ $x \quad \quad ^2$ $x \quad ^2$ $x^2 \quad $
$
$x \quad ^2 \quad $
\end{document}
```

$$\begin{array}{l} X_{012} \ X_{123} \ X_{234} \ X_{345} \ X_{456} \ X_{567} \ X_{678} \ X_{789} \ X_{89+} \\ X_{9+-} \ X_{+-(} \ X_{-(=} \ X_{(=)} \ X_{=)a} \ X_{)ae} \ X_{a eo} \ X_{e ox} \ X_{ox0} \ X_{x01} \\ x^{0i+)n2} \ x^{i+)n2} \ x^{n2} \ x^{2i+)n} \\ x_{34}^{2i+)n} \end{array}$$

## 40 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}
```

$$\begin{array}{c} \iiint_V \\ \iiint_V \\ \iiint_V \end{array}$$

## 41 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}
\[\begin{aligned}
F(s) &= \mathscr{L}\left\{f(t)\right\} = \\
&\int_0^{\infty} \mathop{e}^{-st} f(t) \, \mathop{d}t
\end{aligned}\]
```

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