

# **Math Test**

November 19, 2009



# 1 Limit

A limit:

$$\lim_{x \rightarrow \infty} f(x),$$

which should appear as  $x \rightarrow \infty$  in italics, and «lim» in plain style. Inlined:  $\lim_{x \rightarrow \infty} f(x)$ .

And why not, a sum:

$$\sum_{i=1}^{\infty} x,$$

where the sum's limits should appear below ( $i = 1$ ) and above ( $\infty$ ) the  $\Sigma$ . Inlined:  $\sum_{i=1}^{\infty} x$ . Integral:  $\int_{i=1}^{\infty} x$ .



## 2 Numeration

Equations can be numbered, like 2.1.

$$y = x \tag{2.1}$$

And also like 2.2.

$$x = 3 \tag{2.2}$$

Notice that eq. 2.2 comes after eq. 2.1.

Some equations can also be numbered, even if they don't have a label.

$$x = 2y \tag{2.3}$$

Other equations that contain \* should not be numbered, but perhaps aligned:

*left*

*right*

Now a random environment:  $xy$ .



# 3 Parentheses

Some delimiters also taken from the Spanish Lyx User's Guide. Array:

$$\begin{bmatrix} 12 & 2 \\ 3 & 4 \times y^x \end{bmatrix}$$

And inline array  $\begin{bmatrix} a & b \\ c & dio \end{bmatrix}$ .

There are also big brackets:  $(a) [b] \{c\} \langle d \rangle |e| \langle f \rangle$ .



## 4 Fraction

A big recursive fraction:

$$\frac{1}{\left(1 + \left(\frac{1}{1 + \left(\frac{1}{1 + 2x}\right)}\right)\right)}$$

A nice fraction:  $\frac{5}{6}$ .

A non-diminishing fraction containing alignments:

$$\frac{1}{1 + \left(\frac{1}{1 + x} \times \frac{1}{1 + x}\right)}.$$



# 5 Roots

A square root:  $\sqrt{3}$ . A more complex square root in a fraction:

$$\frac{1}{\left(1 + \sqrt{2} \left(\frac{1}{1+\sqrt{2}}\right) + \sqrt{\frac{1}{2}}\right)}.$$

Higher order roots:  $\sqrt[3]{x+y}$ ,  $\sqrt[x+1]{Weight}$ . In a fraction:

$$\frac{\sqrt[7/8]{\frac{8}{4}x}}{\sqrt[s+5]{\frac{(78x+45y) \times \sqrt{Height}}{\sin(x+1)}} + 5}.$$



## 6 Cases

Used to switch several values.

$$y = \begin{cases} x & i = 0, \\ x + 1 & i < 3 \end{cases}$$



# 7 Spacing

The command `\raisebox` is useful to, surprisingly, raise a little box.

raised *over* lowered and back.

It can also be used just for spacing.

$B^V$ .

There are other spacing commands, like `\hspace: " "`, and `\vspace: ""`.



# 8 Fonts

Fonts can be switched on and off.

By default, text in formulae is shown italicized. Variable: *meters*.

Some font styles. Roman:  $\mathrm{1mathrm}$ . Sans serif:  $\mathbf{2mathsf}$ . Typewriter:  $\mathbf{3mathtt}$ .

Bold:  $\mathbf{4mathbf}$ .

Regular text. Normal text:  $\text{5textfm}$ . Literal text:  $\text{6mbox}$  text. Phonetic alphabet:

$\text{7abcde}$ . Regular text can be embedded into formulae: regular text  $\backslash\text{command}$   $\backslash\text{another command}$   $\backslash\text{no s}$

Units can be shown with or without a magnitude. Without: km. With: 57 km.

Fractional units:  $20^{\text{km/h}}$ . With a fraction before the units:  $\frac{3}{2}$  km,  $\frac{7}{16}$  s.

Some special fonts are supported:  $\mathcal{F}$ ,  $\mathcal{F}$ ,  $\mathbb{F}$ ,  $\mathfrak{F}$ .



# 9 Bye-bye

That's all folks!