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Spacing in math mode

In mathematical mode characters are spaced as if they were part of a single word, regardless of the actual space you insert. This article explains how to insert spaces of different lengths in mathematical mode.

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Introduction

Spacing in maths mode is useful in several situations, let's see an example:

Assume we have the next sets

$$S = \{ z \in \mathbb{C} \mid |z| < 1 \} \quad \text{and} \quad S_2 = \partial S$$

As you see in this example, a mathematical text can be explicitly spaced by means of some special commands

Open an example in ShareLaTeX

Spaces

The spacing depends on the command you insert, the example below contains a complete list of spaces and how they look like.

```
Spaces in mathematical mode.
\begin{align*}
f(x) = & x^2 + 3x + 2 
f(x) = & x^2 + 3x + 2 \setminus 
f(x) = & x^2 + 3x + 2 
f(x) = & x^2 : +3x : +2 
f(x) = & x^2\; +3x\; +2 \
f(x) = & x^2 + 3x + 2
f(x) = x^2 \quad +3x \quad +2 
f(x) = x^2 \qquad +3x \qquad +2
\end{align*}
```

$$f(x) = x^{2} + 3x + 2$$

Check the reference guide for a description of the commands. Note: to see a description of the align* environment see Aligning equations with amsmath

Open an example in ShareLaTeX

Spaces in mathematical mode.

Operators spacing

3ax+4by=5cz\\

3ax<4by+5cz

Spacing around operators and relations in math mode are governed by specific skip lengths:

- \thinmuskip (by default it is equal to 3 mu) • \medmuskip (by default it is equal to 4 mu)
- \thickmuskip (by default it is equal to 5 mu)
- \begin{align*}

$$\label{eq:align*} \mbox{$ 3ax+4by=8$}$$

$$3ax+4by=5cz$$

$$3ax<4by+5cz$$
 For relationnal operators, such as < , > and =, LATEX establishes \thickmuskip space. But for binary

operators such as +, - and x, the \medmuskip space is set. The difference is almost unnoticeable.

Open an example in ShareLaTeX

User-defined binary and relational operators You can force the spacing used in binary or relational operators, so you can define your own.

\begin{align*}

34x^2a \mathbin{\\\} 13bc \\ 34x^2a \mathrel{\\\\} 13bc \\end{align*}
$$34x^2a \# 13bc$$

 $34x^2a~\#~13bc$ The previous example sets a particular spacing before and after # by using \mathrel (relational) and

Open an example in ShareLaTeX

Reference guide

\mathbin (binary) commands.

Description of spacing commands

LATEX code **Description**

\qquad	twice of (= 36 mu)
\ (space after backslash!)	equivalent of space in normal text
\!	-3/18 of (= -3 mu)
\;	5/18 of (= 5 mu)
\:	4/18 of (= 4 mu)
	3/18 of (= 3 mu)
	space equal to the current font size (= 18 mu)

For more information see • Mathematical expressions

- Brackets and Parentheses
- Aligning equations with amsmath • Display style in math mode
- List of Greek letters and math symbols Mathematical fonts
- The not so short introduction to LATEX 2ε

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