Separate long math text under sum symbol into different lines?

Asked 13 years, 8 months ago Modified 1 year, 8 months ago Viewed 127k times

164

I have the following equation, where there is a lot of stuff under the sum symbol:

```
\begin{equation}
d(\vec{x},\vec{y})=
  \sum_{Z_{xy}\in\vec{Z}_{xy},\forall x\in\vec{x},\forall y\in\vec{y}}
    f(Z_{xy})
\end{equation}
```

In the resulting document, I find it kind of hard to read. Is there a way to write the equation to make the result more readable, e.g. putting the stuff under the sum symbol on different lines?

math-mode **equations** Edit tags

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asked Feb 28, 2011 at 23:25

Frank
7,375 9 38 39

Why write under Sum, when mathematical correct is write to right. `\begin{equation} d(\vec{x},\vec{y})= \sum_{Z_{xy}\in\vec{Z}_{xy}} f(Z_{xy}),\forall x\in\vec{x},\forall y\in\vec{y} \end{equation}` – MiMo Jun 10, 2012 at 10:34

1 I agree with you but without the correct spacing, it is as bad as OP's. To be super-picky about it, `forall` is not the same as `over all`. With `forall` the author is relying on the reader's understanding for bad notation. – percusse Jun 10, 2012 at 13:18

5 This is mathematically *incorrect* (if the notation has not introduced formally). But the `\forall` is definitely misused. – egreg Jun 10, 2012 at 13:33

which font are you using? I love your \sum symbol – Peluche Dec 4, 2022 at 22:07

If you want to write a fraction instead, refer to amsmath - In math mode, how do I make the fraction bar "invisible"? - TeX - LaTeX Stack Exchange. – user202729 Dec 13, 2022 at 6:45

6 Answers

Sorted by: Date modified (newest first)

Reset to default

You can use the `\substack` command from the `amsmath` package, like this:


```
\begin{equation}
  d(\vec{x},\vec{y}) =
  \sum_{\substack{Z_{xy}\in\vec{Z}_{xy}\\
                  \forall x\in\vec{x}\\
                  \forall y\in\vec{y}}}
        f(Z_{xy})
\end{equation}
```

However, the result still doesn't look good, because of the extra spacing around the sum symbol:

$$d(\vec{x},\vec{y}) = \sum_{\substack{Z_{xy}\in\vec{Z}_{xy}\\ \forall x\in\vec{x}\\ \forall y\in\vec{y}}} f(Z_{xy})$$

To fix this, you can use the `\mathclap` command from the `mathtools` package, like this:

```
\begin{equation}
 d(\vec{x},\vec{y}) =
    \sum_{\mathclap{\substack{Z_{xy}\in\vec{Z}_{xy}\\
                              \forall x\in\vec{x}\\
                               \forall y\in\vec{y}}}}
          f(Z_{xy})
\end{equation}
```

$$d(\vec{x},\vec{y}) = \sum_{\substack{Z_{xy}\in\vec{Z}_{xy}\\ \forall x\in\vec{x}\\ \forall y\in\vec{y}}} f(Z_{xy})$$

But perhaps you might be happy using **only** `\mathclap`, and not `\substack`. The result looks good as long as the subscript is not too wide.

```
\begin{equation}
  d(\vec{x},\vec{y}) =
    \sum_{\mathclap{{Z_{xy}\in\vec{Z}_{xy},
          \forall x\in\vec{x},
```

```
          \forall y\in\vec{y}}}} f(Z_{xy})
\end{equation}
```

$$d(\vec{x},\vec{y}) = \sum_{\substack{Z_{xy}\in\vec{Z}_{xy},\forall x\in\vec{x},\forall y\in\vec{y}}} f(Z_{xy})$$

The `mathtools` package also have several other useful commands for typesetting mathematics, including more commands for improving the display of subscripts and superscripts. I very much recommend taking a look at its documentation.

Share Edit Follow Flag edited Nov 22, 2017 at 14:41 answered Nov 1, 2011 at 19:52

Malcolm 425 • 3 • 7

Karl Ove Hufthammer 4,98[illegible] • 9

25 The `\forall` symbols should be omitted. – egreg Jun 10, 2012 at 13:34

4 @egreg: Maybe one should just write three sums in total, the first two over `x\in\vec{x}` and `y\in\vec{y}` ? – Hendrik Vogt Jun 10, 2012 at 13:51

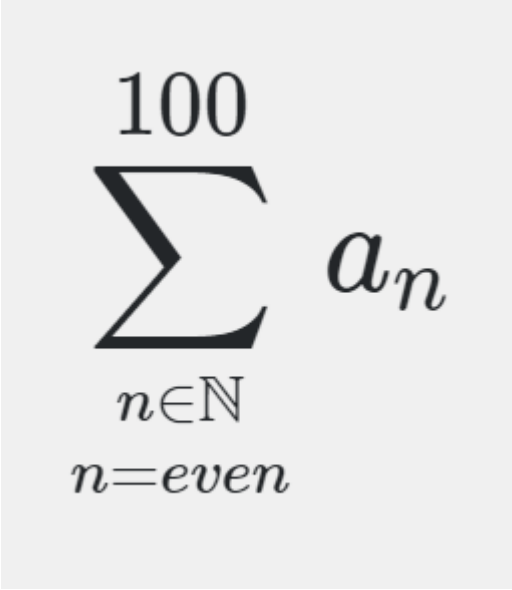
2 @HendrikVogt I'd use a two line `\substack`: `\sum_{\substack{Z_{xy}\in\vec{Z}_{xy}\\x\in\vec{x},y\in\vec{y}}}` – egreg Jun 10, 2012 at 13:56

@KarlOveHufthammer You forgot ` \\ `. – Karlo Mar 22, 2017 at 14:13

Looks good, but seems not to work in `rmarkdown`'s `beamer_presentation`s. Can that be confirmed? – jay.sf Oct 29, 2017 at 15:26

Using `A \atop B`. E.g:

```
\sum_{{n\in \mathbb{N}}\atop{n= even}}^{100} a_n
```



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answered Mar 2, 2023 at 11:45
C.F.G
534 2 14

Try the `\substack` command from the `amsmath` package, details of which are found here

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edited Jan 27, 2023 at 13:08

answered Feb 28, 2011 at 23:43
Ian Thompson
44.3k 8 119 184

In case anyone else needs that old link: ctan.org/pkg/amsmath – psitae Jan 25, 2023 at 20:53

1 @psitae --- An ftp link! I've been here a long time. I've updated the link in the answer. – Ian Thompson Jan 27, 2023 at 13:09

[For those who are looking for MathJax way] it can be done without `\substack` as

4

```
\sum_{a=b \\ b=c \\ c=a}
```

wich results in

$$\sum_{\substack{a=b\\ b=c\\ c=a}}$$

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edited Jan 22, 2023 at 17:45

answered Dec 21, 2020 at 11:20

VIVID
195 1 6

3 doesn't seem to work for me. I am in the 'align' environment. – Danyal Mar 16, 2021 at 5:22

Doesn't work for me, either. – relatively Jan 20, 2023 at 14:15

3 This definitely doesn't work in LaTeX. Unfortunately, it does in MathJax, which is not a reason for advertising it here. – egreg Jan 22, 2023 at 21:57

This post is hidden. It was deleted 6 years ago by CarLaTeX, Werner ♦, Stefan Kottwitz ♦.

-1

This answer was marked as spam or rude or abusive and is therefore not shown - you can see the revision history for details.

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answered Oct 16, 2018 at 18:09

smartcool1243
1

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1

This answer is hidden. This answer was deleted and converted to a comment 12 years ago by Joseph Wright ♦.

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answered Jun 10, 2012 at 10:34

MiMo
123 7

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