# LaTeX: Hyphens in Math Mode

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**Abstract**

Hyphens are sometimes necessary in LaTeX's math mode to structure long variable or function names. We present four ways to typeset them, two bad ones and two good ones. This discussion seems to be necessary since the knowledge about how to do it right is not wide-spread.

## Bad: typing hyphens directly

In math mode, the hyphen symbol is typeset as minus sign, which is too long for an ordinary hyphen. Moreover, the spacing is wrong.

| | |
|---|---|
| `$\mathit{non-unique}$` | $\mathit{non-unique}$ |
| `$\mathrm{non-unique}$` | $\mathrm{non-unique}$ |
| `$A_{\mathit{non-unique}}$` | $A_{\mathit{non-unique}}$ |
| `\boldmath $A_{\mathit{non-unique}}$` | $\boldsymbol{A_{\mathit{non-unique}}}$ |

## Bad: using mboxes

Putting the hyphen into an mbox improves the situation: the length of the hyphen as well as the spacing is correct. However, size and font don't change with the surrounding math.

| | |
|---|---|
| `$\mathit{non\mbox{-}unique}$` | $\mathit{non\mbox{-}unique}$ |
| `$\mbox{non-unique}$` | $\mbox{non-unique}$ |
| `$\mathrm{non\mbox{-}unique}$` | $\mathrm{non\mbox{-}unique}$ |
| `$A_{\mathit{non\mbox{-}unique}}$` | $A_{\mathit{non\mbox{-}unique}}$ |
| `\boldmath$A_{\mbox{non-unique}}$` | $\boldsymbol{A}_{\mbox{non-unique}}$ |

## Good: defining a mathchar

To obtain a proper hyphen that changes with the surrounding math we define a new math character:

```
\mathchardef\mhyphen="2D
```

| | |
|---|---|
| `$\mathit{non\mhyphen unique}$` | $\mathit{non\mhyphen unique}$ |
| `$\mathrm{non\mhyphen unique}$` | $\mathrm{non\mhyphen unique}$ |
| `$A_{\mathit{non\mhyphen unique}}$` | $A_{\mathit{non\mhyphen unique}}$ |
| `\boldmath$A_{\mathit{non\mhyphen unique}}$` | $\boldsymbol{A_{\mathit{non\mhyphen unique}}}$ |

## Good: defining an amsmath operator

The `amsmath` package provides the command `\operatorname`, which typesets hyphens correctly and also changes their size and font. The only restriction is that you are bound to the current operator font, usually upright. As a general rule, names denoting entities with a fixed meaning are typeset in an upright font, whereas variables are typeset in an italic font.

```
\usepackage{amsmath}
```

| | |
|---|---|
| `$\operatorname{non-unique}$` | $\operatorname{non-unique}$ |
| `$A_{\operatorname{non-unique}}$` | $A_{\operatorname{non-unique}}$ |
| `\boldmath$A_{\operatorname{non-unique}}$` | $\boldsymbol{A_{\operatorname{non-unique}}}$ |

## Defining appropriate commands

No matter which method you choose, it is a good idea to define commands for your operators. This avoids keying in lengthy character sequences and achieves consistent typesetting.

```
\mathchardef\mhyphen="2D
\newcommand\nuniq{\mathit{non\mhyphen unique}}
$\nuniq$, \boldmath$A_\nuniq$
```

$\mathit{non\mhyphen unique}$, $\boldsymbol{A_{\mathit{non\mhyphen unique}}}$

```
\usepackage{amsmath}
\newcommand\nuniq{{\operatorname{non-unique}}}
$\nuniq$, \boldmath$A_\nuniq$
```

$\operatorname{non-unique}$, $\boldsymbol{A_{\operatorname{non-unique}}}$

Note the use of extra braces around `\operatorname`, which is necessary to make `\nuniq` work in subscripts and the like.