

Package ‘latex2exp’

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Type Package

Title Use LaTeX Expressions in Plots

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Description Parses and converts LaTeX math formulas to R's plotmath expressions, used to enter mathematical formulas and symbols to be rendered as text, axis labels, etc. throughout R's plotting system.

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URL <https://www.stefanom.io/latex2exp/>,
<https://github.com/stefano-meschiari/latex2exp>

BugReports <https://github.com/stefano-meschiari/latex2exp/issues>

Imports stringr, magrittr

Encoding UTF-8

Suggests testthat, waldo, knitr, ggplot2, rmarkdown, purrr, tibble,
reactable, htmltools, RCurl, rlang, dplyr

VignetteBuilder knitr

RoxygenNote 7.1.2

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latex2exp	<i>Deprecated; use TeX instead.</i>
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Description

Deprecated; use [TeX](#) instead.

Usage

```
latex2exp(string, output = c("expression", "character", "ast"))
```

Arguments

string	A character vector containing LaTeX expressions. Note that any backslashes must be escaped (e.g. "\$\alpha\$").
output	The returned object, one of "expression" (default, returns a plotmath expression ready for plotting), "character" (returns the expression as a string), and "ast" (returns the tree used to generate the expression).

Value

Returns an expression (see the output parameter).

latex2exp_examples	<i>latex2exp Examples</i>
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Description

Plots a number of example LaTeX string, as parsed by [TeX](#).

Usage

```
latex2exp_examples(cex = 1)
```

Arguments

cex	Multiplier for font size
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latex2exp_supported	Returns the list of supported LaTeX commands.
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Description

If show is TRUE, also show a searchable table of symbols.

Usage

```
latex2exp_supported(show = FALSE, ...)
```

Arguments

show	Show a searchable table of symbols
...	Other parameters (not used)

Value

A data frame containing a table of supported LaTeX commands.

plot.expression	Previews a LaTeX equation
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Description

Plots the result of a call to [TeX] on the current graphical device. This is useful to preview the output before placing it on a plot.

Usage

```
## S3 method for class 'expression'
plot(x, ..., main = NULL)
```

Arguments

x	A plotmath expression returned by TeX .
...	Parameters to be passed to the text function.
main	Title of the plot

Examples

```
plot(TeX("Example equation: $a \\geq b$"))
```

```
print.latexexpression
```

Print an expression returned by TeX()

Description

Prints out the plotmath expression generated by [TeX](#) and the original TeX string.

Usage

```
## S3 method for class 'latexexpression'
print(x, ...)
```

Arguments

x	Object to print
...	Ignored

```
print.latextoken2
```

Prints out a parsed LaTeX object, as returned by TeX(..., output='ast'). This is primarily used for debugging.

Description

Prints out a parsed LaTeX object, as returned by `TeX(..., output='ast')`. This is primarily used for debugging.

Usage

```
## S3 method for class 'latextoken2'
print(x, depth = 0, ...)
```

Arguments

x	The object
depth	Increases padding when recursing down the parsed structure
...	(Ignored)

render_latex	<i>Renders a LaTeX tree</i>
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Description

Returns a string that is a valid plotmath expression, given a LaTeX tree returned by parse_latex.

Usage

```
render_latex(tokens, user_defined = list(), hack_parentheses = FALSE)
```

Arguments

tokens	tree of tokens
user_defined	any custom definitions of commands passed to TeX
hack_parentheses	render parentheses using group('(', phantom(), ' . ') and group(')', phantom(), ' . '). This is useful to return valid expressions when the LaTeX source contains mismatched parentheses, but makes the returned expression much less tidy.

Value

String that should be parseable as a valid plotmath expression

TeX	<i>Converts LaTeX to a plotmath expression.</i>
-----	---

Description

TeX converts a string comprising LaTeX commands (such as a math equation) to a [plotmath](#) expression. Plotmath expressions can be used through R's graphic system to represent formatted text and equations.

Usage

```
TeX(
  input,
  bold = FALSE,
  italic = FALSE,
  user_defined = list(),
  output = c("expression", "character", "ast")
)
```

Arguments

<code>input</code>	A character vector containing LaTeX strings. Note that any backslashes must be escaped (e.g. <code>"\$\\alpha"</code>).
<code>bold</code>	Whether to make the entire label bold
<code>italic</code>	Whether to make the entire label italic
<code>user_defined</code>	Described in the "Adding New Commands" section.
<code>output</code>	The returned object, one of "expression" (default, returns a plotmath expression ready for plotting), "character" (returns the expression as a string), and "ast" (returns the tree used to generate the expression).

Value

Returns a plotmath expression by default. The output parameter can modify the type of the returned value.

If more than one string is specified in the input parameter, returns a list of expressions.

Adding new commands

New LaTeX commands can be defined by supplying the `user_defined` parameter. The `user_defined` parameter is a list that contains LaTeX commands as names, and template strings as values. A LaTeX command that matches one of the names is translated into the corresponding string and included in the final plotmath expression. The file `symbols.R` in the source code of this package contains one such table that can be used as a reference.

The template string can include one of the following special template parameters:

- `$arg1`, `$arg2`, ... represent the first, second, ... brace argument. E.g. for `\frac{x}{y}`, `$arg1` is `x` and `$arg2` is `y`.
- `$opt` is an optional argument in square brackets. E.g. for `\sqrt[2]{x}`, `$opt` is `2`.
- `$sub` and `$sup` are arguments in the exponent (^) or subscript (_) following the current expression. E.g. for `\sum^x`, `$sup` is `x`.
- `$LEFT` and `$RIGHT` are substituted the previous and following LaTeX expression relative to the current token.

See the Examples section for an example of using the `user_defined` option.

Examples

```
TeX("$\\alpha$") # plots the greek alpha character
TeX("The ratio of 1 and 2 is $\\frac{1}{2}$")

a <- 1:100
plot(a, a^2, xlab=TeX("$\\alpha$"), ylab=TeX("$\\alpha^2$"))

# create a \\variance command that takes a single argument
TeX("$\\variance{X} = 10$", user_defined=list("\\variance"="sigma[$arg1]^2"))
```

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