Using the \texttt{mhequ} package

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This package provides two environments: \texttt{equ} for single-line equations and \texttt{equs} for multi-line equations. They behave similarly to the built-in \texttt{equation} and \texttt{amsmath}'s \texttt{align} environments and can essentially be used as drop-in replacements. The main difference is that equation numbers are handled differently: equations are numbered if and only if they have a \texttt{label}, so there is no need for starred versions. This also applies to individual lines in a multiline equation. Also, the \texttt{equs} environment supports blocks of equation with more

Since \texttt{mhequ} redefines the \texttt{tag} and \texttt{intertext} commands, it should always be loaded after the \texttt{amsmath} package. However, these two commands should still behave correctly inside the \texttt{amsmath} environments. The rest of this document demonstrates the usage of the \texttt{mhequ} package, it is easiest to just read the source code of this document to see how it works. See also the description given at the start of the file \texttt{mhequ.sty}.

Here is a simple labelled equation:

\[ e^{i\pi} + 1 = 0 . \]

Removing or adding the label does not require a change of environment:

\[ e^{i\pi} + 1 = 0 . \]

However, if the option \texttt{numberall} is set, then every single equation is numbered. A simple list of equations can be displayed either with one number per equation

\[ f(x) = \sin(x) + 1 , \]
\[ h(x) = f(x) + g(x) - 3 , \]

\[ f(x) = \sin(x) + 1 , \]
\[ h(x) = f(x) + g(x) - 3 , \]

or with one number for the whole list

\[ f(x) = \sin(x) + 1 , \]
\[ h(x) = f(x) + g(x) - 3 . \]

Of course, it can also have no number at all:

\[ f(x) = \sin(x) + 1 , \]
\[ h(x) = f(x) + g(x) - 3 . \]

The command \texttt{\minilab\{label\_name\}} allows us to create a counter for the lines in a block of equations.

\[ f(x) = \sin(x) + 1 , \]  
\[ (7a) \]
\begin{align*}
g(x) &= \cos(x) - x^2 + 4, \quad \text{(7b)} \\
h(x) &= f(x) + g(x) - 3. \quad \text{(7c)}
\end{align*}

One can refer to the whole block (7) or to one line, like (7a) for example. It is possible to use any tag one likes with the $\texttt{\textbackslash tag(displayed\_tag)}$ command

\[ x = y, \quad \text{(\star)} \]

which in this case was used as $\texttt{\textbackslash tag($\star$)}$. Such an equation can be referred to as usual: (\star). Of course, mhequ can be used in conjunction with the usual \texttt{equation} environment, but mhequ is great, so why would you want to do this?

\[ x = y + z \quad \text{(8)} \]

Typesetting several columns of equations is quite easy and doesn’t require 10 different environments with awkward names:

\[
\begin{align*}
x &= y + z \quad a &= b + c \quad x &= v \\
x &= y + z \quad a &= b + c \quad x &= u + 1
\end{align*}
\]

(9)

(9’)

\[
\begin{align*}
a &= b \quad \text{(multicol)} \\
x &= y + z \quad a^2 &= (b - c)^3 + y
\end{align*}
\]

and also (this is some $\texttt{\textbackslash intertext}$)

\[
\begin{align*}
x &= y + z \quad a &= (b + c)^2 - 5 \quad \ell &= m
\end{align*}
\]

(10)

We can even extend the block (7) much later using the $\texttt{\textbackslash minilab(label\_name)}$ command:

\[
\begin{align*}
x &= y + z \quad f(x) &= b \\
x &= y + z \quad g(x) &= b
\end{align*}
\]

(7d)

(7e)

\[
\begin{align*}
\sin^2 x + \cos^2 x &= 1
\end{align*}
\]

(7f)

It is possible to change the type of subnumbering and to use the $\texttt{\textbackslash text}$ command without having to load \texttt{amstext}:

\[
I_1 = \int_a^b g(x) \, dx, \quad \text{(First equation)} \quad \text{(11A)}
\]

\[
I_2 = \int_a^b g(x^2 - 1) \, dx. \quad \text{(Second equation)} \quad \text{(11B)}
\]