Using the `mhequ` package

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This package provides two environments: `equ` for single-line equations and `equs` for multi-line equations. They behave similarly to the built-in `equation` and `amsmath`'s `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 `\label`, so there is no need for starred versions. This also applies to individual lines in a multiline equation. Also, the `equs` environment supports blocks of equation with more

Since `mhequ` redefines the `\tag` and `\intertext` commands, it should always be loaded *after* the `amsmath` package. However, these two commands should still behave correctly inside the `amsmath` environments. The rest of this document demonstrates the usage of the `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 `mhequ.sty`.

Here is a simple labelled equation:

$$e^{i\pi} + 1 = 0\;. \tag{1}$$

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

$$e^{i\pi} + 1 = 0\;.$$

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

$$\begin{aligned} f(x) &= \sin(x) + 1\;, \qquad (2)\\ h(x) &= f(x) + g(x) - 3\;, \qquad (3) \end{aligned}$$

$$\begin{aligned} f(x) &= \sin(x) + 1\;, \qquad (4)\\ h(x) &= f(x) + g(x) - 3\;, \qquad (5) \end{aligned}$$

or with one number for the whole list

$$\begin{aligned} f(x) &= \sin(x) + 1\;,\\ h(x) &= f(x) + g(x) - 3\;. \end{aligned} \tag{6}$$

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

$$\begin{aligned} f(x) &= \sin(x) + 1\;,\\ h(x) &= f(x) + g(x) - 3\;. \end{aligned}$$

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

$$f(x) = \sin(x) + 1\;, \tag{7a}$$

$$g(x) = \cos(x) - x^2 + 4\ , \tag{7b}$$

$$h(x) = f(x) + g(x) - 3\ . \tag{7c}$$

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 `\tag{displayed_tag}` command

$$x = y\ , \tag{$\star$}$$

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

$$x = y + z \tag{8}$$

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

$$x = y + z \qquad a = b + c \qquad x = v \tag{9}$$
$$x = y + z \qquad a = b + c \qquad x = u + 1 \tag{9'}$$
$$\text{(multicol)} \qquad x = y$$
$$a = b \qquad \text{(multicol)}$$
$$x = y + z \qquad a^2 = (b - c)^3 + y$$

and also (this is some `\intertext`)

$$x = y + z \qquad a = (b + c)^2 - 5 \qquad \ell = m \tag{10}$$

We can even extend the block (7) much later using the `\minilab{label_name}` command:

$$x = y + z \quad x = y + z \quad f(x) = b \tag{7d}$$
$$x = y + z \quad x = y + z \quad g(x) = b \tag{7e}$$
$$\sin^2 x + \cos^2 x = 1 \tag{7f}$$

It is possible to change the type of subnumbering and to use the `\text` command without having to load `amstext`:

$$I_1 = \int_a^b g(x)\,dx\ , \qquad \text{(First equation)} \tag{11A}$$
$$I_2 = \int_a^b g(x^2 - 1)\,dx\ . \qquad \text{(Second equation)} \tag{11B}$$