Examples in mathematical mode in C4

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1 A matrix

Here begins a text in line, followed by a matrix in line, $A(x,y) = \begin{pmatrix} \frac{x}{y} & 0 & 0 \\ 1 & 0 & x \end{pmatrix}$. After the matrix, return into the text mode. But we can edit the same matrix on a separate line like this, with `$$...$$`:

$$A(x,y) = \begin{pmatrix} \frac{x}{y} & 0 & 0 \\ 1 & 0 & x \end{pmatrix}$$

or like this, with `\[...\]`:

$$A(x,y) = \begin{pmatrix} \frac{x}{y} & 0 & 0 \\ 1 & 0 & x \end{pmatrix}$$

2 Several equations

Here are several equations, numbered on separate lines. The equation counter is a variable called equation.

$$\lim_{n\to\infty} \left(1 + \frac{1}{n}\right)^n = e \tag{1}$$

$$F(s) = \int_0^\infty f(t)e^{-st}dt \tag{2}$$

This is an example of the `eqnarray` environment, allowing to align the `=` sign of several equations separated by `\\`. The `\nonumber` command is placed before the equation we do not want to be numbered.

$$\begin{aligned} x_n &= x_{n-1} + x_{n-2} && (3) \\ f(x) &= x^2 \\ g(x) &= x^2 + y^2 \\ &\quad + z^2 && (4) \end{aligned}$$

If equation 2 is displayed in line it looks like this: $F(s) = \int_0^\infty f(t)e^{-st}dt$. Here is an example of a function defined on intervals:

$$f(x) = \begin{cases} x, & x >= 0 \\ -x, & x < 0 \end{cases} \tag{5}$$

Note how the `array` environment is delimited.