

**Purpose** Conversion of a polynomial object into LaTeX code

**Syntax** `Tex_str = pol2tex(A1,A2,...,AN)`  
`Tex_str = pol2tex(A1,A2,...,AN,'File_name')`

**Description** The command

`Tex_str = pol2tex(A1,A2,...,AN)`

converts the polynomial matrices or standard Matlab matrices  $A_1, A_2, \dots, A_N$  into a string `Tex_str` in LaTeX code to be used in LaTeX files. The LaTeX is a common document preparation system effective namely for mathematical formulas including matrices [1]. The output string contains a sequence of LaTeX commands to create an array surrounded by bracket delimiters in a display mathematical mode. The user is supposed to copy this string inside a LaTeX file. Alternatively,

`Tex_str = pol2tex(A1,A2,...,AN,'File_name')`

appends `Tex_str` to existing file `File_name.tex`. If the file does not exist, then the output string is saved in a new-created TEX file. This file, however, does not contain any LaTeX preamble and hence cannot be compiled by LaTeX as it is. Instead, it can be connected to another TEX file using LaTeX command `input` or `include`.

The macro allows any number of input arguments. The resulting format is given by currently active display format, that is controlled by the functions `pformat` and `format`.

**Examples** The following examples illustrate how the command should be used.

**Example 1**

Consider a polynomial matrix  $C$

`>> C=[-8+s 1-6*s 6+6*s; 0 2 1; -1+4*s-3*s^2 2.1e-5 11-s]`

`C =`

<code>-8 + s</code>	<code>1 - 6s</code>	<code>6 + 6s</code>
<code>0</code>	<code>2</code>	<code>1</code>
<code>-1 + 4s - 3s^2</code>	<code>2.1e-005</code>	<code>11 - s</code>

that should be included into a LaTeX based documentation. Calling `pol2tex` creates a string

# pol2tex

---

```
» pol2tex(C)
ans =
$$
C=
\left[ \begin{array}{lll}
-8+s & 1-6s & 6+6s \\
0 & 2 & 1 \\
-1+4s-3s^2 & 2.1*10^{-5} & 11-s
\end{array} \right]
$$
```

which can further be edited if necessary. If this string is copied into an existing LaTeX file and compiled by LaTeX one gets a fairly nice result

$$C = \begin{bmatrix} -8+s & 1-6s & 6+6s \\ 0 & 2 & 1 \\ -1+4s-3s^2 & 2.1*10^{-5} & 11-s \end{bmatrix}$$

## Example 2

As another example consider a constant matrix B

```
B =
    0.2200    -0.3333    0.1222    4.0000
   -0.6364     8.0000    0.0927    0.4000
```

and change the format to *rational*

```
» format rat
» B
B =
    11/50    -1/3    11/90    4
   -7/11     8    29/313    2/5
```

Then

```
» pol2tex(B)
```

```

ans =
$$
B=
\left[ \begin{array}{cccc}
& & & \\
& \frac{11}{50} & -\frac{1}{3} & \frac{11}{90} & \\
& 4 & & & \\
-\frac{7}{11} & 8 & \frac{29}{313} & \\
\frac{2}{5} & & & 
\end{array} \right]
\end{array} \right]
$$

```

that processed by LaTeX results in

$$B = \begin{bmatrix} \frac{11}{50} & -\frac{1}{3} & \frac{11}{90} & 4 \\ -\frac{7}{11} & 8 & \frac{29}{313} & \frac{2}{5} \end{bmatrix}$$

**Algorithm** The macro uses standard MATLAB 5 operations.

**Diagnostics** The macro displays an error messages if

- Not enough input arguments.
- Inappropriate class of the input argument.

**See also** `char` Convert a polynomial object to a string  
`pformat` Set the output format for a polynomial object

**References** Leslie Lamport: *LaTeX: A Document Preparation System*. Addison-Wesley, Reading, Massachusetts, 1994.