

L^AT_EX tables and equations

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- `tabular` makes something with rows and columns.

Example 1. Input:

```
\begin{tabular}{rc11}
xxx & yyyy & zzzz & wwww \\
t & u & v & s
\end{tabular}
```

Output:

```
xxx  yyyy  zzzz  wwww
t    u    v    s
```

(1) The letters `{rc11}` specify how many columns there are (four, one for each letter) and how each is justified (r = right, c = center, l = left). (2) Separate each column with `&` and each row with `\\`.

- `array` is just like `tabular`, but it's used in math mode.

Example 2. Input:

```
$$
\begin{array}{rc11}
xxx & yyyy & zzzz & wwww \\
t & u & v & s
\end{array}
$$
```

Output:

```
xxx  yyyy  zzzz  wwww
t    u    v    s
```

- Equations using `array`

Example 3. Input:

```
$$
\begin{array}{rcl}
x & = & \frac{-2\pm\sqrt{4+4}}{2} \\
& = & \frac{-2\pm 2\sqrt{2}}{2} \\
& = & -1\pm\sqrt{2}
\end{array}
$$
```

Output:

$$\begin{aligned} x &= \frac{-2 \pm \sqrt{4+4}}{2} \\ &= \frac{-2 \pm 2\sqrt{2}}{2} \\ &= -1 \pm \sqrt{2} \end{aligned}$$

- Equations using `align*` (and `\usepackage{amsmath}`)

Example 4. Input:

```
\documentclass{article}
\usepackage{amsmath}
\begin{document}
\begin{align*}
x &= \frac{-2\pm\sqrt{4+4}}{2} \\
&= \frac{-2\pm 2\sqrt{2}}{2} \\
&= -1\pm\sqrt{2}
\end{align*}
\end{document}
```

Output:

$$\begin{aligned} x &= \frac{-2 \pm \sqrt{4+4}}{2} \\ &= \frac{-2 \pm 2\sqrt{2}}{2} \\ &= -1 \pm \sqrt{2} \end{aligned}$$

- Differences between `array` and `align*`. (1) `align*` needs about half as many `&`'s: you only put them between the left hand side and the = (or + or > etc.). (2) The spacing is somewhat better in `align`. (3) If you use `align` instead of `align*` you get equation numbering. (4) By entering `\allowdisplaybreaks` in the preamble, you can let L^AT_EX break the page in the middle of the equations. (5) `array` gives you more control over each column (but requires that you describe each column).
- Matrices using `array` with `\left[` and `\right]`.

Example 5. Input:

```
$$
\left[ \begin{array}{ccc}
a & b & c \\
d & e & f \\
g & h & i
\end{array} \right]
$$
```

Output:

$$\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$$

- Matrices using `bmatrix` (and `\usepackage{amsmath}`)

Example 6. Input:

```
\documentclass{article}
\usepackage{amsmath}
\begin{document}
\begin{bmatrix}
a & b & c \\
d & e & f \\
g & h & i
\end{bmatrix}
\end{document}
```

Output:

$$\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$$