

L^AT_EX: Math and Text in one page

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- Single dollar sign math: text style. By default, whatever you enter in L^AT_EX is treated as text. A relatively small percentage of your entire document should have $\$...\$$ around it to put it in math mode.
 - The first $\$$ turns math on, the second $\$$ turns it off.
 - Most useful for including math within the line of text.

Example 1. Input:

Define the relation R on Z such that, for any $a, b \in Z$, we have aRb if and only if the distance between a and b is at most 2 .

Output:

Define the relation R on Z such that, for any $a, b \in Z$, we have aRb if and only if the distance between a and b is at most 2 .

- Double dollar sign math: display style. A relatively small percentage of your math material should have $$$...\$$$ around it.
 - The first $$$$ turns math on, the second $$$$ turns math off.
 - Contents show up in “display style” (see next bullet point for what this means).

Example 2. Input:

Applying integration by parts to $\int x \cos(x) dx$ we see that we get

$$\int x \cos(x) dx = x \sin(x) - \int \sin(x) dx,$$

which equals $x \sin(x) + \cos(x) + C$.

Output:

Applying integration by parts to $\int x \cos(x) dx$ we see that we get

$$\int x \cos(x) dx = x \sin(x) - \int \sin(x) dx,$$

which equals $x \sin(x) + \cos(x) + C$.

- Text versus display. “Display style” means both where the formula is shown (centered, on a line by itself) and how the formula is sized and arranged (some symbols are bigger; limits are placed above and below). Some examples of text style versus display style:

Fractions: $\frac{a}{b}$ versus $\frac{a}{b}$.

Integrals: \int_a^b versus \int_a^b .

Sums: $\sum_{n=1}^{\infty}$ versus $\sum_{n=1}^{\infty}$.

Limits: $\lim_{n \rightarrow \infty} a_n$ versus $\lim_{n \rightarrow \infty} a_n$.

- Forcing text style or display style.
 - Include `\textstyle` within your mathematical formula to force text style.
 - Include `\displaystyle` within your mathematical formula to force display style.
 - Include `\everymath{\displaystyle}` to force display style everywhere in the current scope.

Example 3. Input:

The formula $\frac{1}{2} \sum_{n=1}^{10} n^2$ is forced one way. The formula

$$\frac{1}{2} \sum_{n=1}^{10} n^2$$

is forced the other way.

Output:

The formula $\frac{1}{2} \sum_{n=1}^{10} n^2$ is forced one way. The formula

$$\frac{1}{2} \sum_{n=1}^{10} n^2$$

is forced the other way.

- Text within mathematics. Do you absolutely have to include some text within a math formula? You might, for instance inside a display style formula, but don’t do it for than a word or two at a time. Use the `\text` command (and load the package `amstext`).

Example 4. Input:

$A = \{x \in Z : x^2 \geq 10 \text{ and } x^2 \leq 100\}$.

Output:

$$A = \{x \in Z : x^2 \geq 10 \text{ and } x^2 \leq 100\}.$$

- Writing style guidelines.
 1. Every letter that stands for a variable, every letter that stands for a set, every mathematical expression, every minus sign, etc., must be in math mode, not ordinary text mode.
 2. Every mathematical expression (even things in display mode) needs to be part of an English sentence that begins with a capitalized English word and ends with a period.
 3. Don’t try to control every line by putting `\` in to end the line, or putting every statement of your proof on a line by itself. Type mostly sentences, with a relatively small percentage of stuff in $\$...\$$ and an even smaller percentate in $$$...\$$$, and let L^AT_EX wrap the lines, which, after all, are mostly words.