

# ULYSSIS LaTeX Workshop - Mathematics

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An inline mathematical environment inside a piece of text can be defined between dollar signs. For example, this is Pythagoras’ formula:  $a^2 + b^2 = c^2$ . Superscripts can be written with the hat symbol and subscripts can be realised with an underscore:  $C_1 + C_2 = C_3$ . Multiple characters in a sub/superscript can realised with curly braces:  $T_{t_0}^{n_0}$

Greek letters:  $\alpha, \beta, \gamma$ ... as well as  $\Pi, \Sigma, \dots$

Mathematical environments can also be placed in between paragraphs as centred expressions:

$$\begin{aligned} 6 &\leq 9 \\ -1 &\geq -2 \end{aligned}$$

If you want to refer to specific expressions, you can use the “equation” environment:

$$a - 7 = 3 \tag{1}$$

Equation 1 implies that  $a = 10$ .

Many different special symbols and operations are supported.

$+- =!/( ) [] <> |' :$

Logical symbols:

$$\forall x \in \mathbb{R} : \exists \epsilon \geq 0$$

Trigonometric functions:

$$\cos(2\theta) = \cos^2 \theta - \sin^2 \theta$$

Fractions:

$$\frac{3}{4}$$
$$\left(\frac{3}{4}\right)^2$$

Limits:

$$\lim_{x \rightarrow \infty} \exp(-x) = 0$$

Square roots:

$$\sqrt{2}$$

Sums and series:

$$\sum_{k=1}^n k = \frac{n(n+1)}{2}$$

Integrals:

$$\int_a^b f(x) dx$$

We can type an equation directly in L<sup>A</sup>T<sub>E</sub>X.

$$\int_{-\infty}^{\infty} e^{-x^2} dx = \sqrt{\pi}$$

We can also copy equations from Wikipedia by selecting the expression (click and drag over it with the cursor), copy it (ctrl+c) and paste (ctrl+v).

$$\operatorname{div} \mathbf{F}|_p = \lim_{V \rightarrow \{p\}} \iint_{S(V)} \frac{\mathbf{F} \cdot \hat{\mathbf{n}}}{|V|} dS$$