

Writing Equations in L^AT_EX

This document showcases various ways to write mathematical equations in L^AT_EX, along with how to cite and reference them.

1. Inline Equations

Inline equations appear within text, such as $a^2 + b^2 = c^2$, or the famous identity $e^{i\pi} + 1 = 0$.

2. Displayed Equations

Equations can be displayed on a separate line for clarity:

$$\int_0^1 x^2 dx = \frac{1}{3}$$
$$E = mc^2 \tag{1}$$

3. Aligning Multiple Equations

When showing multiple steps or related expressions, aligned equations work best:

$$x + y = 10 \tag{2}$$

$$x - y = 4 \tag{3}$$

4. Centered Equations Without Alignment

For unrelated equations:

$$a + b = c \tag{4}$$

$$m^2 - n^2 = (m + n)(m - n) \tag{5}$$

5. Long Equations (Multline)

Long equations that don't fit in one line can be written as:

$$f(x) = a_0 + a_1x + a_2x^2 + a_3x^3 + \cdots + a_nx^n + \\ + a_{n+1}x^{n+1} + \cdots + a_{2n}x^{2n} \quad (6)$$

6. Piecewise Functions

Define functions based on conditions:

$$f(x) = \begin{cases} x^2 & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases} \quad (7)$$

7. Using eqnarray

Although somewhat outdated, `eqnarray` can still be used:

$$a \quad = \quad b + c \quad (8)$$

$$= \quad d - e \quad (9)$$

8. Referencing and Bibliography

Equation 10 below expresses Newton's second law of motion:

$$F = ma \quad (10)$$

The Pythagorean theorem, $a^2 + b^2 = c^2$, remains central in Euclidean geometry. This and other essential mathematical results are well discussed in *The L^AT_EX Companion* [1].

References

- [1] Michel Goossens, Frank Mittelbach, and Alexander Samarin,
The L^AT_EX Companion, Addison-Wesley, 1993.