

The L^AT_EXtemplate file for an article in the ΠME Journal

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Abstract

This is a sample file. You can use it as a guide for your submission.

1 L^AT_EX

Use sectioning commands for headings. Often longer articles are divided into a few sections.

L^AT_EX knows that a new paragraph has started if you skip a line in the input file. It will automatically indent the proper amount.

You must use labelling commands, e.g. `\label`, `\ref`, `\bibitem`, and `\cite`, to refer to sections of your document, such as see Section 2, see Figure 1, or bibliography entries, such as see [1]. Otherwise the look of the numbers, and sometimes the numbers themselves, will be wrong in the final version at the printer.

2 Abel's Theorem

In this section we give some background. For instance the following definition.

Definition 1 *A semi-quaver is defined to be half a quaver.*

If that definition is not enough, here is another:

Definition 2 *The order of a note n in a quaver Q , $O(n, Q)$, is defined by the equation*

$$O(n, Q) = \int_0^\infty \sin(n^2 t) / (1 - Qn) dt.$$

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Some equations one writes inline, such as *Pythagoras' Theorem*, $c^2 = a^2 + b^2$, while others are better off as displayed equations, like the quadratic formula,

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

which solves the quadratic $ax^2 + bx + c = 0$. If the quadratic formula is written inline, $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$, it is readable but not very nice. This form, $x = (-b \pm \sqrt{b^2 - 4ac})/2a$, is harder to read as a fraction, but better because of the larger type.

Every inline equation must be part of a sentence: Since $x < 1/2$ we have $x + y < x + 1/2$. Inline fractions, such as $x < \frac{1}{2}$, are discouraged but not prohibited.

You can use formulae in theorems, as in the following.

Theorem 1 *If $f(x)$ is defined by the equation*

$$f(x) = \begin{cases} x^2, & \text{for } x \geq 0. \\ -x^2, & \text{for } x < 0 \end{cases} \quad (1)$$

Then $f(x)$ is continuous at $x = 0$.

PROOF: Since $\lim_{x \rightarrow 0^-} f(x) = \lim_{x \rightarrow 0^-} -x^2 = 0$ and $\lim_{x \rightarrow 0^+} f(x) = \lim_{x \rightarrow 0^+} x^2 = 0$ it follows that $\lim_{x \rightarrow 0} f(x) = 0 = f(x)$, as required. QED

Did you notice the grammatical error in Theorem 1? The sentence leading into equation 1 is never completed. The following theorem is worded correctly.

Theorem 2 *If $f(x)$ is defined by the equation*

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

then $f(x)$ is continuous at $x = 0$.

One rule of thumb of mathematical composition is to use mathematical notation inside sentences only for nouns. For example, one writes that “ R is the the radius of a circle”, but not that “the radius of the circle =’s the side length of the square”. According to this rule it is correct to write that “ $(x > 0) \Rightarrow (x^3 > 0)$ ” since the double arrow is part of an equation, but not to write “ x is positive $\Rightarrow x^3$ is positive”, since the double arrow is acting as a verb.

Here is another kind of common structure:

Theorem 3 *The following are equivalent.*

1. $a \leq b$
2. $b \geq a$
3. $a = b$ or $a < b$

And here is a typical matrix

$$\begin{bmatrix} 0 & -1 & 0 & 1 & 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 & -1 & 0 & 0 & 0 \\ 0 & 0 & \alpha & \alpha & -\alpha & -\alpha & 0 & 0 \\ \alpha & \alpha & 0 & 0 & 0 & 0 & -\alpha & -\alpha \\ 0 & 0 & 1 & 0 & 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 & -1 \end{bmatrix}$$

Sometimes you want to use a figure. Figure 1 was made (using TeXCad) with

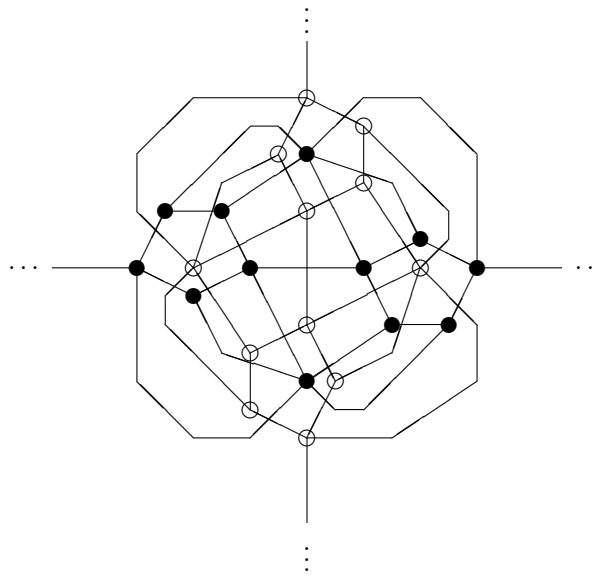


Figure 1: A polyhedron with all self-dualities of order 4

the \LaTeX picture environment. Sometimes a figure is just too complicated to draw with these simple commands. In this case we use eps files. For instance in Figure 2 the picture of the parabola was produced in Maple and saved as an eps (eps) file, (pure ascii mode, no preview, no thumbnail). When the document is processed, the .eps file must reside in the same directory as the .tex file. Also, the command $\text{\usepackage{graphicx}}$ should occur near the top of the document. Notice that this figure has been scaled so that the overall size is convenient (width 2.5 inches), but now the text is far too small. To avoid this problem it is often best to generate a figure which is approximately the same size as it will appear in the document.

A complete source of information on writing documents in \LaTeX is [1]. (Look in the source so see how to produce that citation.) Last of all is the style of the IIME bibliography: Author's names in small caps, journal article titles uncapitalized and in italics, book titles capitalized and in quotes.

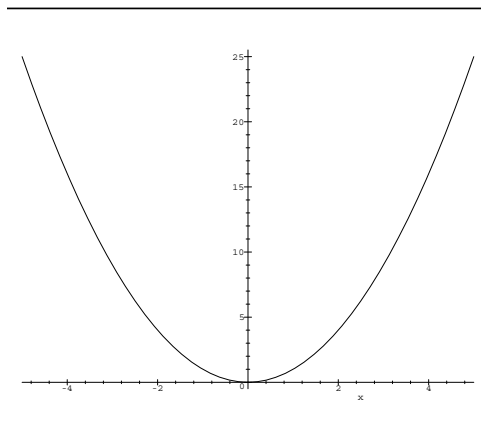


Figure 2: $y = x^2$

References

- [1] LAMPORT, L., “ \LaTeX - A Document Preparation System”, Addison-Wesley, 1998.
- [2] FILIOQUE R. and HELIOTROPE, B., *Why Fermat’s last theorem is really a lemma*, American Mathematical Weekly, Vol. 7, No. 1, pp 115-116, 1998.

About the author:

We would like a short biographical sketch, beyond just your affiliation to be placed after the bibliography. And below that, your full address.

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