

Excercises GSNS L^AT_EXbeginners

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September 8, 2022

1. make a simple document of the article class with 1 paragraph of text. Use `a5paper` and a font size of 10pt.
2. emphasise some text by using the command `\emph{your text}`.
3. find out what the `\newline` command does.
4. LaTeX can hyphenate words automatically. For this it needs the `babel` package, with optional argument `english`. Import this package now.
5. Try the `\quad` command in your document.
6. Add two new paragraphs to your document.
7. Now import the `parskip` package and check the results.
8. Add headings to your paragraphs by using the `section` and `subsection` commands.
9. Make a title for your document, with an author and date.
10. Add the following text to your document, pay attention to special characters:
 - `{ } >& 100%`
11. Recreate the following text color effects. First import the `xcolor` package by adding the line: `\usepackage{xcolor}` to the preamble.
 - `red green yellow`
12. Write the pythagorean theorem in inline mode.
13. Use the `\frac` and `\blacksquare` command to write the following inline math: From $z = \frac{x^3}{3(y+1)^2}$ and $x > 0$ it follows that z is positive
 - . Make sure to import the `amssymb` package first.
14. go to the wikipedia page about the dot-product (in english) and copy-paste the algebraic definition of the dot product into Overleaf in an `align` environment. You can copy all the mathematics on wikipedia directly into LaTeX.
15. recreate the article on the next page

**COUNTEREXAMPLE TO EULER'S CONJECTURE
ON SUMS OF LIKE POWERS**

BY L. J. LANDER AND T. R. PARKIN

Communicated by J. D. Swift, June 27, 1966

A direct search on the CDC 6600 yielded

$$27^5 + 84^5 + 110^5 + 133^5 = 144^5$$

as the smallest instance in which four fifth powers sum to a fifth power. This is a counterexample to a conjecture by Euler [1] that at least n n th powers are required to sum to an n th power, $n > 2$.

REFERENCE

1. L. E. Dickson, *History of the theory of numbers*, Vol. 2, Chelsea, New York, 1952, p. 648.