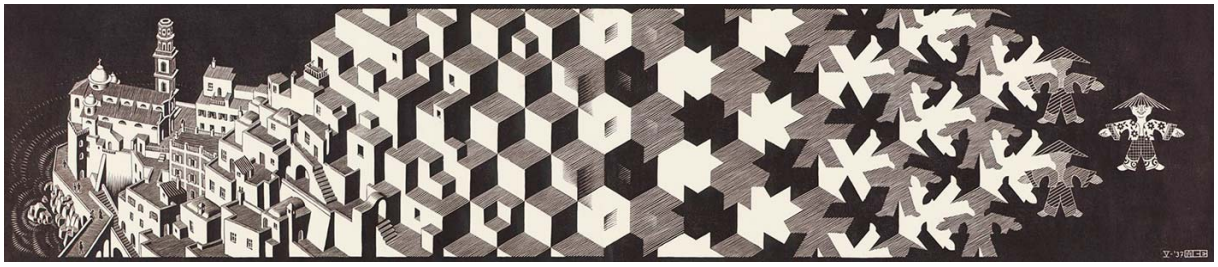

College Name

Subject 1234Lecture notes

Course title

Firstname Lastname

Summer 2077

Contents

Introduction

There is a theory which states that if ever anyone discovers exactly what the Universe is for and why it is here, it will instantly disappear and be replaced by something even more bizarre and inexplicable.

There is another theory which states that this has already happened.

Figure 1: The Universe

Chapter 1 | How to use this Worksheet

§1. First Section

Uses kpfonts.

Definition 1.1: Definition Title

A definition. The title is optional.

Typewriter font is written as `Computer Code`.

Example 1.2: Title

- First example
  - Note 1
  - Note 2
- Second example

Some other text.

Theorem 1.3: Theorem Title

A Theorem that uses objects defined in definition 1. Title is optional.

$$\int_a^b uv'\,\mathrm{d}x = [u(x)v(x)]\Big|_a^b - \int_a^b u'(x)v(x)\,\mathrm{d}x$$

Proof of theorem 3.

Proof text ends in qed symbol. Must be supplied the label of the theorem. ■

■ **Question 1.** **Automatic Question numbering**

(a) *Greek letters and uppercase math letters are always upright. Such as*

(i) $\alpha x^2 + \beta$

(ii) $y = mx + C \in \mathbb{R}$

(b) *Do the following tasks after 1.a.*

(i) *first do a.i.* (ii) *??* (iii) *Profit*

Solution. Solution to the exercise. Uncomment the "solutionfalse" flag to make solutions invisible. ■

Fun Fact: This is a note with a custom title. Default is 'Note:'.

§2. Second Section

Axiom 2.4

This is an axiom.

Exploration Activity

A digression into tangentially related topics.

§2.1. Case 1: First subsection

When example 2 is true.

A Warning: Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis.

§2.2. Case 2: Second subsection

Do question 1 first.

Code:

```
$ chmod +x hello.py
$ ./hello.py

Hello World!
```

Chapter 2 | How to write in LaTeX

§1. Important Stuff

This section contains some important information about writing in LaTeX.

§1.1. Notes about Quotes and Internal references

When you quote something in LaTeX, you have to do it like ``this.'' If you do it like ''this,'' one of your quotation marks will be backwards.

Another nice thing about using LaTeX is that you can reference equations and figures once you have labeled them. For example, fig. 1 is a picture of the universe! You can also reference equations, sections, lemmas, theorems, etc. See the examples in section 1.2.

§1.2. More Math Stuff

Mathematical expressions, like $x^2 + 3$, are easy to create in LaTeX. It is also easy to have a formula written on a separate line, like

$$x^2 + 3 = 0.$$

Numbered equations are easy too!

$$x^5 - 9x^4 = \sin 3. \tag{2.1}$$

You can also refer to previous equations. The formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \tag{2.2}$$

is the quadratic formula. You can use eq. (2.2) to solve quadratic equations.

Here is a formula with some simple mathematical operations:

$$5 \times 3 + 4 \div 2 = 2 \cdot 10 - 3 < 100.$$

Another simple formula:

$$x^2 \geq 0.$$

This formula is true for $x \in \mathbb{R}$. One more simple formula:

$$0 \neq \frac{\pi}{2}.$$

Some simple trigonometry:

$$\sin(2x) = 2 \sin x \cos x.$$

Some simple logarithms:

$$\log(x) = \frac{\ln x}{\ln 10}.$$

And now some Greek letters:

$$\alpha + \beta = \gamma.$$

A formula involving set notation:

$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C).$$

The derivative:

$$\lim_{h \to 0} \frac{f(x+h) - f(x)}{h} = f'(x).$$

The Riemann sum

$$\sum_{i=1}^{n} f(x_i) \Delta x$$

approximates the integral

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

Finally, an infinite series:

$$1, \frac{1}{2}, \frac{1}{4}, \ldots.$$

§2. Conclusion

''I always thought something was fundamentally wrong with the universe.'' [1]

Resources

[1] D. Adams. **The Hitchhiker's Guide to the Galaxy**. San Val, 1995. ISBN: 9781417642595. URL: http://books.google.com/books?id=W-xMPgAACAAJ.

[2] Colin Adams. **Knot Book**. W.H. Freeman, 1994.

[3] G. Winter et al. **Genetic Algorithms in Engineering and Computer Science**. Chickester, England: John Wiley and Sons, 1995.

[4] numberphile. **Pascal's Triangle - Numberphile**. Mar. 2017. URL: https://www.youtube.com/watch?v=0iMtlus-afo.