

# L<sup>A</sup>T<sub>E</sub>Xcourse week 2, exercises

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Please make the following mathematical formulas. It could be useful to look into the tex-code of the manual.

## 1 Mathmode

$$n! = \prod_{i=1}^n i \quad (1)$$

$$\sum_{n=1}^{\infty} z^n = \frac{1}{1-z}, \quad |z| < 1 \quad (2)$$

$$\int_a^b x^2 dx = \frac{1}{3}(b^3 - a^3) \quad (3)$$

$$\oint \nabla f dt = 0 \quad (4)$$

$$(\alpha + \beta)^2 = (\alpha + \beta)(\alpha + \beta) \quad (5)$$

$$= \alpha\alpha + \alpha\beta + \beta\alpha + \beta\beta \quad (6)$$

$$= \alpha^2 + 2\alpha\beta + \beta^2 \quad (7)$$

The same formulas, but without reference numbers and flushed left:

$$\begin{aligned} (\alpha + \beta)^2 &= (\alpha + \beta)(\alpha + \beta) \\ &= \alpha\alpha + \alpha\beta + \beta\alpha + \beta\beta \\ &= \alpha^2 + 2\alpha\beta + \beta^2 \end{aligned}$$

If you find the above really easy, you could try the line below.

$$\int \cosh^{-1} \frac{x}{a} dx = \begin{cases} x \cosh^{-1} \frac{x}{a} - \sqrt{x^2 - a^2} & [\cosh^{-1}(\frac{x}{a}) > 0, a > 0] \\ x \cosh^{-1} \frac{x}{a} + \sqrt{x^2 - a^2} & [\cosh^{-1}(\frac{x}{a}) < 0, a > 0] \end{cases} \quad (8)$$

## 2 Matrices

$$A_{3,3} = \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix}, \quad B_{3,3} = \begin{bmatrix} b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{bmatrix}, \quad C_{3,3} = \begin{vmatrix} c_{11} & c_{12} & c_{13} \\ c_{21} & c_{22} & c_{23} \\ c_{31} & c_{32} & c_{33} \end{vmatrix}$$

### 3 Tables

Try to make the table below. You can look into the manual to see how it is done there. Do you understand every command and sign?

Remark that the course used to be given in the second block. This year, the course is given in the first block, making it impossible to find the correct date for the described activities.

A–Eskwadraat activities	Date	Time	Description
Tickling Murder Game	October 1 <sup>st</sup>	18.45–23.00	Cosi Fan Tutte is one of Mozart’s classic opera’s. The story is about four young lovers testing their relationships on a far-away holiday. Sounds familiar? That’s right, this is the original Temptation island in opera form!
A-EskwaTaart	October 7 <sup>th</sup>	12.00-17.00	Free pie!
LaTeX Course part 4	October 14 <sup>th</sup>	17.00-19.00	Finally, we consider packages and presentations in LaTeX...

Table 1: Table of A–Eskwadraat activities