

# 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

$$n! = \prod_{i=1}^n i \tag{1}$$

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

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

$$\oint \nabla f dt = 0 \tag{4}$$

$$(\alpha + \beta)^2 = (\alpha + \beta)(\alpha + \beta) \tag{5}$$

$$= \alpha\alpha + \alpha\beta + \beta\alpha + \beta\beta \tag{6}$$

$$= \alpha^2 + 2\alpha\beta + \beta^2 \tag{7}$$

The same formulas, but without references:

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

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

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

## 2 Matrices

$$A_{3,3} = \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix}$$

### 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?

<b>A-Eskwadraat activities</b>	<b>Date</b>	<b>Time</b>	<b>Description</b>
Bake-a-cake-contest	November 19 <sup>th</sup>	12:45-13:15	You can hand in your homemade cake until 12:50h. At 1pm the price will be given to the best cook. Afterwards you can buy a piece of cake. The money will go to charity.
Kickboxing	November 19 <sup>th</sup>	16-17.30	Kickboxing at Olympos, 1.5 hours for just 5 euros. You can buy your ticket at A-Eskwadraat, BBG 269.
Paint your mug	November 24 <sup>th</sup>	12-16	This is your chance to customize your own mug and place it in the A-Eskwadraat room.

Table 1: Table of A-Eskwadraat activity's