

L^AT_EX Day 2

Skill Pill

February 2, 2017

1 Equation exercises

We can calculate $6^2 - 5 = 36 - 5 = 31$.

Euler's identity is $e^{i\pi} + 1 = 0$.

Let $x, y \in \mathbb{R}$. Then $\forall \epsilon > 0$, $x < y + \epsilon$ if and only if $x \leq y$.

$$(x - \alpha)(x + \alpha) = x^2 - \alpha^2 \quad (1)$$

$$E_k = \frac{1}{2}mv^2 \quad (2)$$

$$\sin(\phi) = \cos(\phi + \pi/2) \quad (3)$$

$$\int_a^b x^\alpha dx = \frac{x^{\alpha+1}}{\alpha+1} \Big|_a^b \quad (4)$$

$$f(x) = \sum_{n=0}^{\infty} \frac{f^{(n)}(a)}{n!} (x-a)^n \quad (5)$$

$$g'(x) = \lim_{\Delta x \rightarrow 0} \frac{g(x+h) - g(x)}{\Delta x} \quad (6)$$

$$\lim_{n \rightarrow \infty} 2^n \underbrace{\sqrt{2 - \sqrt{2 + \sqrt{2 + \dots + \sqrt{2}}}}}_n = \pi \quad (7)$$

$$\lim_{x \rightarrow 0^-} \frac{1}{x^r} = \begin{cases} -\infty, & \text{if } r \text{ is odd} \\ +\infty, & \text{if } r \text{ is even} \end{cases} \quad (8)$$

$$f(x) = \begin{cases} 1 & \text{if } x \in \mathbb{Q} \\ 0 & \text{if } x \notin \mathbb{Q} \end{cases} \quad (9)$$

2 Tables exercises

- A crappy table about nature to practice lines:

Mountains rough	Rivers fast	Lakes standing	Beaches and Deserts sandy
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- A summary of the Skill Pill (fixed width):

Teacher	Class summary
Jérémie	He did a very good job in explaining the basics. I didn't like his hairstyle.
Albert	He made us do a bunch of useless mathy things, but he had an amazing soul patch.
James	What is this sorcery about changing formats? I could never get tired of listening to him.
Alexandru	Thanks to him I am ready to tackle my thesis. I will never be the same after his class.

- Nutritional information with multicol and multirow:

	per 100 g	per serving (40 g)
Caloric Value	1.705 kJ 406 kcal	682 kJ 162 kcal
Fat	way too much	

3 Matrices exercises

- The identity matrix:

$$\mathbb{I} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

- 2D rotation matrix:

$$U(\theta) = \begin{pmatrix} \cos(\theta) & \sin(\theta) \\ -\sin(\theta) & \cos(\theta) \end{pmatrix}$$

- Whatever this is:

$$X = \begin{pmatrix} 3 \\ 2 \\ 1 \end{pmatrix}$$