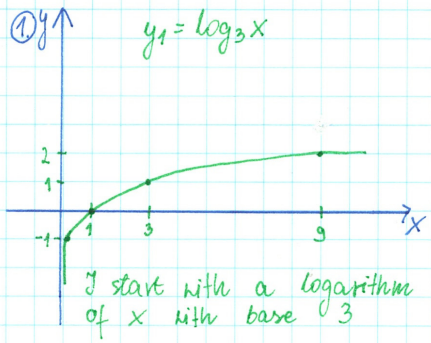
What to say in front of the blackboard - a brief tutorial:

Exercise: Draw the graph of $y = |\log_3(-x) - 1|$ (each step separately) State the domain and the co-domain of each function.

Małgorzata Chlechowicz
1st year EPH student

Solution:

① $y_1 = \log_3 x$



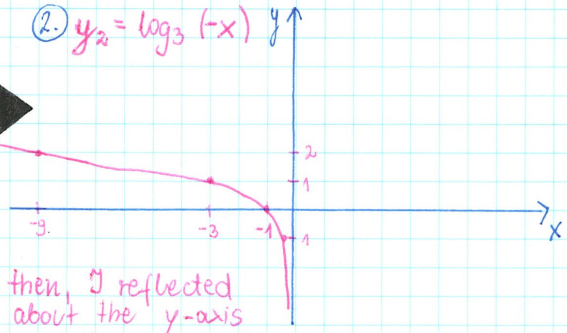
I start with a logarithm of x with base 3

$D_{y_1}: (0, +\infty)$

$C_{y_1}: \mathbb{R}$

② $y_2 = \log_3(-x)$

NEXT



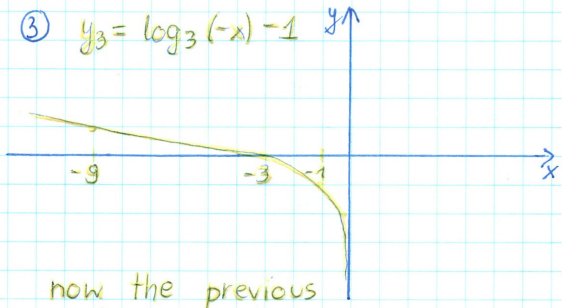
then, I reflected about the y-axis y_2 is the mirror of y_1

$D_{y_2}: (-\infty, 0)$

$C_{y_2}: \mathbb{R}$

NEXT

③ $y_3 = \log_3(-x) - 1$



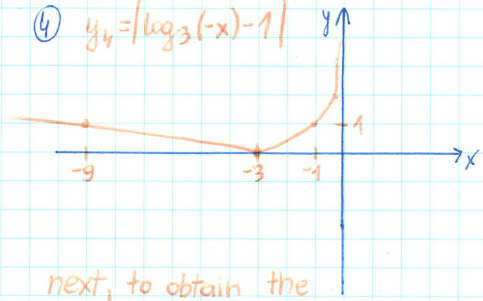
now the previous graph moves down by 1 unit

$D_{y_3}: (-\infty, 0)$

$C_{y_3}: \mathbb{R}$

NEXT

④ $y_4 = |\log_3(-x) - 1|$



next, to obtain the absolute value, the negative part of the previous graph moves up

$D_{y_4}: (-\infty, 0)$

$C_{y_4}: (0, +\infty)$

Verte ⟶

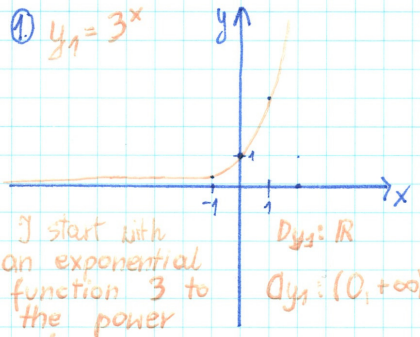
What to say in front of the blackboard - a brief tutorial :

Gosia Chlechowicz
1st year EPM student

Exercise :→ Draw the graph (each step separately) of $y = |3^{x+2} - 1| - 1|$
State the domain and the co-domain of each function.

SOLUTION :

① $y_1 = 3^x$



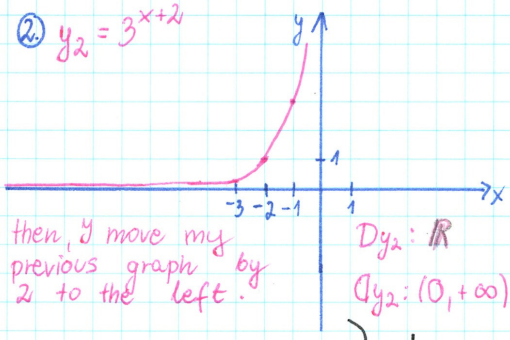
I start with an exponential function 3 to the power of x.

$D_{y_1}: \mathbb{R}$

$C_{y_1}: (0, +\infty)$

next →

② $y_2 = 3^{x+2}$



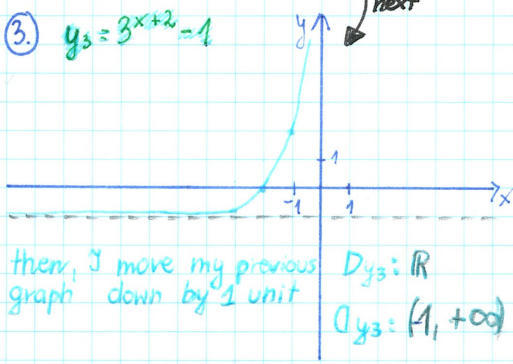
then, I move my previous graph by 2 to the left.

$D_{y_2}: \mathbb{R}$

$C_{y_2}: (0, +\infty)$

next ↓

③ $y_3 = 3^{x+2} - 1$



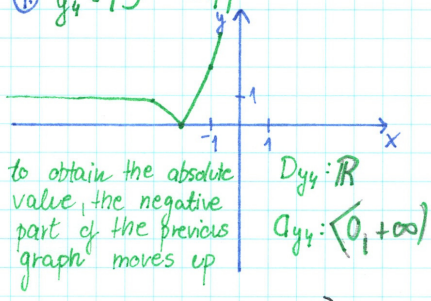
then, I move my previous graph down by 1 unit

$D_{y_3}: \mathbb{R}$

$C_{y_3}: (-1, +\infty)$

← next

④ $y_4 = |3^{x+2} - 1|$



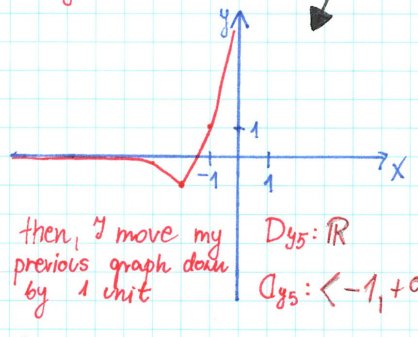
to obtain the absolute value, the negative part of the previous graph moves up

$D_{y_4}: \mathbb{R}$

$C_{y_4}: \langle 0, +\infty)$

next ↓

⑤ $y_5 = |3^{x+2} - 1| - 1$



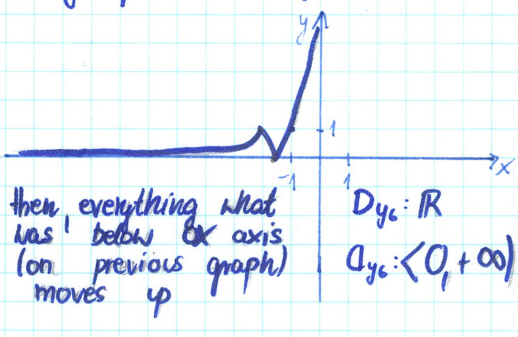
then, I move my previous graph down by 1 unit

$D_{y_5}: \mathbb{R}$

$C_{y_5}: \langle -1, +\infty)$

next →

⑥ $y_6 = |3^{x+2} - 1| - 1|$



then, everything what was below Ox axis (on previous graph) moves up

$D_{y_6}: \mathbb{R}$

$C_{y_6}: \langle 0, +\infty)$