5th Homework sheet Category Theory

- Deadline: 16 May, 13:00 sharp.

- Submit your solutions by handing them to the lecturer or the teaching assistant at the *beginning of the lecture.*

- Good luck!

Exercise 1 *(10 points)* Show that there is a string of four adjoints between **Cat** and **Sets**,

$$V \dashv F \dashv U \dashv R$$

where $U \colon \mathbf{Cat} \to \mathbf{Sets}$ is the forgetful functor to the set of objects. (Hint: For V consider the connected components of a category.)