

## Category Theory

### Exercise Sheet 2

Lecture Homepage: <https://www.math.cit.tum.de/algebra/lehre/sommersemester-2022/ss2022-category-theory/>

**Exercise 1.** Find several examples of functors from some of the other lectures which you are attending, and show that these satisfy the definition of a functor.

**Exercise 2.** Show that any functor sends isomorphisms to isomorphisms.

**Exercise 3.** Given categories  $C$  and  $D$ , what is the difference between a functor  $C^{\text{op}} \rightarrow D$  and a functor  $C \rightarrow D^{\text{op}}$ ? What is the difference between a functor  $C \rightarrow D$  and a functor  $C^{\text{op}} \rightarrow D^{\text{op}}$ ?