Category Theory
Exercise Sheet 1

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

Exercise 2. Show that the identity morphisms in a category are uniquely determined. That is, for each object c of a category C, show that there exists a unique element $\mathrm{id}_c \in \mathrm{Hom}(c, c)$ such that for all objects d of C and for all $f \in \mathrm{Hom}(c, d)$ (resp. all $f \in \mathrm{Hom}(d, c)$) we have $f \circ \mathrm{id}_c = f$ (resp. $\mathrm{id}_c \circ f = f$).