

# **Definition** (Category of sets)

The category of sets **Set** is defined by:

1. *Objects*: all sets.
2. *Morphisms*: given sets  $X$  and  $Y$ , the homset  $\text{Hom}_{\mathbf{Set}}(X; Y)$  is the set of all functions from  $X$  to  $Y$ .
3. *Identity morphism*: given a set  $X$ , its identity morphism  $\text{Id}_X$  is the identity function  $X \rightarrow X$ ,  $\text{Id}_X(x) = x$ .
4. *Composition operation*: the composition operation is the usual composition of functions.