

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 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.