

Exercises 1 Algebra 3

- ① Find 3 examples of categories not in the lecture
- ② - Recall a preorder (X, \leq) is a set X with a binary rel \leq satisfying $(x \leq x)$ & $(x \leq y \& y \leq z \Rightarrow x \leq z)$.
A preorder gives rise to a small category X^* with objects the elements of X & a (unique) morphism $x \rightarrow y \Leftrightarrow x \leq y$.
- Can you construct a preorder from a small category?
- ③ Recall that a monoid M gives rise to a 1-object category ΣM .
Can you construct monoid(s) from a small category?