

Math 432: Set Theory and Topology HOMEWORK 4 Due date: Feb 23 (Thu)

Exercises from “A quick introduction to basic set theory”. 2, 3, 4, 5

Other (mandatory) **exercises**.

1. Below, for the questions asking for examples, make sure your examples are different from those in the notes (“A quick introduction to basic set theory”).
 - (a) Write down the ordinal 5 (the 6th least ordinal) explicitly.
 - (b) Give examples A, B of transitive sets such that the relation \in on A is not an ordering, but on B it is.
 - (c) Give an example of a non-transitive set.
2. Recall that a function $f : X \rightarrow Y$ is a *subset* of $X \times Y$ satisfying a certain property. Give two different proofs that $\{f(x) : x \in X\}$ is a set: one using only the Replacement axiom and one using only the Comprehension axiom.