

UE Mengenlehre SoSe2024

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Session 1

updated on March 7 at 23:22

- 1) Show that (Separation) follows from the other axioms of ZF.
- 2) Assume $\forall x \exists y (y \text{ is transitive } \wedge x \in y)$. Recall that the foundation scheme consists of

$$A \neq \emptyset \rightarrow \exists x \in A (A \cap x = \emptyset)$$

for every class term A . The foundation axiom is

$$\forall x (x \neq \emptyset \rightarrow \exists y (y \in x \wedge y \cap x = \emptyset)).$$

Show that the versions are equivalent over ZF - (Foundation).

- 3) Show Lemma 3.3(ii) from the lecture notes, i.e. the class Ord is strictly linearly ordered by \in .
- 4) Let α be an ordinal. Show that
 - (a) $\alpha + 1$ is an ordinal and
 - (b) $\alpha + 1$ is the immediate successor of α in the strict linear order (Ord, \in) .