

Exercises of Analysis-01

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1 Simple Set Theory

1. This statement is not permitted: $A \in B \in A$. So we **CAN'T** have a set of all sets. (If U is a set of all sets, then $U \in U \in U$.)

2 Equivalence Relation

1. Suppose U is a collection of some sets, define relation R on U : $xRy \Leftrightarrow \exists$ a bijection $f : x \rightarrow y$. (Check it out!)

This relation has a name *Equipollence* (denoted by \leftrightarrow), which is a topic of our next course, and I will show that the statement $x \leftrightarrow P(x)$ is always false.

3 Partial Order and Posets

1. The power set of a nonempty set is a poset ordered by inclusion.
2. On the set of natural numbers, we can define a relation $|$ based on divisibility:

$$a|b \Leftrightarrow a \text{ is a divisor of } b.$$

Use primary school arithmetics you can see this is actually a partial order.