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Math 3425 Foundations of Mathematics

In-class Proof 1

Let R be a set and let $A_1, A_2, ..., A_n$ be subsets of A such that $A_i \cap A_j = \oslash$ when $i \neq j$ and such that $A = \cup_{i=1}^{n} A_i$. Define a relation R on A by $(a, b) \in R$ if there is some i, $1 \leq i \leq n$ with $a \in A_i$ and $b \in A_i$.

2b) Prove that R is transitive.

Proof:

Suppose there is some i, $1 \leq i \leq n$ with $c \in A_i$.

By definition of Transitive: If $(a, b) \in R$ and $(b, c) \in R$, then $(a, c) \in R$.

Therefore R is transitive.