

Definition

The relation $A \sim B \iff |A| = |B|$ is an equivalence relation.

Proof

- **reflexive.** For any set A , the identity map $f: A \rightarrow A$ with $f(x) = x$ is bijective.
- **symmetric.** If $f: A \rightarrow B$ is bijective, then f is invertible, and $f^{-1}: B \rightarrow A$ is bijective.
- **transitive.** If $f: A \rightarrow B$ and $g: B \rightarrow C$ are bijective, then $g \circ f: A \rightarrow C$ is bijective.