Recall. Let $f : A \to B$. Then f

1. is said to be injective if $f(a_1) = f(a_2)$ implies $a_1 = a_2$ for all $a_1, a_2 \in A$.
2. is said to be surjective if for all $b \in B$, there exists $a \in A$ such that $f(a) = b$.
3. is said to be bijective if it is both injective and surjective.
4. has a left inverse if there exists $g : B \to A$ such that g