

Exercise: Let G be the group where every element is its own inverse. Show that G is abelian.

Proof. Take $g \in G$. Then $g^2 = e$ and $g = g^{-1}$. We also have $h \in G$ such that $h^2 = e$ and $h = h^{-1}$. We want to show that $hg = gh$.
 G is a group $\implies gh \in G$. $\implies gh = (gh)^{-1} = h^{-1}g^{-1}$. But $(hg)^{-1} = h^{-1}g^{-1} = hg = gh \implies G$ is abelian. \square