Quiz #1

Problems:

1. (1pt) Give an example of two matrices $A, B \in GL_2(\mathbb{R})$, such that their product is not commutative, that means that $AB \neq BA$.

2. (1pt) List the elements of the group $U_{15}$ of the units of the set $\mathbb{Z}/15\mathbb{Z}$.

3. (1pt) Show that if $G$ is a group with only 2 elements then there exists an isomorphism between $G$ and $\mathbb{Z}/2\mathbb{Z}$.

4. (2pt) Let $G$ be a group and let $H$ be a subgroup of $G$. Let $x$ be an element of $G$. Define $xHx^{-1} := \{xhx^{-1} | h \in H\}$. Prove that $xHx^{-1}$ is a subgroup of $G$. (Be precise and do not forget steps!)