

Algebra I – autumn 2024 – Homework 5

1. Decide whether $f: (\mathbb{Z}_6, +) \rightarrow (\mathbb{Z}_7^\times, \cdot), f([a]_6) = [3]_7^a$ defines a map. If so, decide whether it is a group homomorphism or even an isomorphism.
2. Give an example of a group G and a non-injective group homomorphism $\varphi: G \rightarrow G$ whose kernel is equal to its image.