Algebra - I
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ALGEBRA I

1. Lecture 08: Group Homomorphisms

Definition 1.1. *A homomorphism from a group G to a group H is a function $f : G \to H$ such that $f(g_1 g_2) = f(g_1)f(g_2)$ for all $g_1, g_2 \in G$.*

Given groups G,H with identities $e, 1$ respectively and a homomorphism $f : G \to H$ we have:

- $f(e) = 1$.
- $f(g^{-1}) = f(g)^{-1}$ for $g \in G$.

Now, I will end this recording with by listing a few basic properties of homomorphisms .

- A homomorphism is an isomorphism if and only if it is a bijection.
- For any group G, the identity map is a group homomorphism.
- If $f : G \to H$ is a group homomorphism and $g : H \to K$ is another group homomorphism, then $g \circ f$ is also a group homomorphism.