Algebra - I
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ALGEBRA I

1. Lecture 09: Normal subgroups

Definition 1.1. *A subgroup N of a group G is normal in G if:*

$$g^{-1}ng \in N,$$

for all $g \in G$ and $n \in N$.

Given a homomorphism $f : G \to H$ define $\text{Im}(f) = \{h \in H \mid \exists g \in G : f(g) = h\}$ and define $\ker(f) = \{g \in G \mid f(g) = e\}$ where e is the identity of H. Then $\text{Im}(f)$ is a subgroup of H and $\ker(f)$ is a normal subgroup of G.

Is S_{n-1} a normal subgroup of S_n?