

3.3: The Isomorphism Theorems

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Theorem: The First Isomorphism Theorem: If $\varphi : G \rightarrow H$ is a homomorphism of groups, then $\ker \varphi \trianglelefteq G$ and $G/\ker \varphi \simeq \varphi G$

Corollary 17: Let $\varphi : G \rightarrow H$ be a homomorphism of groups.

1. φ is injective iff $\ker \varphi = 1$
2. $|G : \ker \varphi| = |\varphi(G)|$