

Modern Algebra Graduation Exam

November 8, 2019

1. Let G be a cyclic group and H a subgroup of G . Show that H is also cyclic.
2. Let $\varphi : G \rightarrow H$ be a group homomorphism. Prove that $\ker \varphi$ is a subgroup of G . Is this a normal subgroup?
3. Let H be a subgroup of G of index 2. Show that H is normal in G .

The End