

Math 331 Spring 2006
Assignment 7: Due by March 27

1. Find two nonisomorphic groups of order 6.
2. Consider the subset of inner automorphism of a group G defined as

$$\text{Inn}(G) = \{ \gamma_a \in \text{Aut}(G) \mid \gamma_a(g) = aga^{-1} \text{ all } g \in G \text{ each } a \in G \}.$$

Show $\text{Inn}(G)$ is a normal subgroup of $\text{Aut}(G)$.

3. (1) Is A_4 simple ?
(2) Prove that $S_4/V \simeq S_3$, where V is a subgroup of S_4 defined as

$$\{(1), (12)(34), (13)(24), (14)(23)\}.$$