Written Assignment No. 2

as corrected in class on Oct. 10

due October 14, 2005

General Directions: Written assignments should be submitted typeset. What you submit must represent your own work.

Assigned Exercises

Read these directions carefully: for each of the following statements either provide a proof that the statement is true or label the statement as false and provide justification.

1. Any group homomorphism $\phi : G \to G'$ where $|G|$ is a prime must either be the trivial homomorphism or else be an injective (one-to-one) map.
2. For any groups G, G', any subgroup H of G, any group homomorphism $\phi : G \to G'$, and any element $a \in G$ one always has the equality of sets

$$\{\, x \in G \mid \phi(x) \;=\; \phi(a)\} \quad = \quad Ha \quad .$$