

Math 361

Quiz 5

10 points possible.

1. Let (G, \triangle) , (G', \square) , and (G'', \oplus) be groups.

(a) Write down what it means for the function $\alpha : G \rightarrow G'$ to be a group homomorphism. Do not omit the operation symbols \triangle , \square , and/or \oplus ; include them explicitly.

(b) Write down what it means for the function $\beta : G' \rightarrow G''$ to be a group homomorphism. Do not omit the operation symbols \triangle , \square , and/or \oplus ; include them explicitly.

(c) Write down what it means for the function $\delta : G \rightarrow G''$ to be a group homomorphism. Do not omit the operation symbols \triangle , \square , and/or \oplus ; include them explicitly.

(d) Assume $\alpha : G \rightarrow G'$ and $\beta : G' \rightarrow G''$ are group homomorphisms. Prove that the composite map $\beta\alpha : G \rightarrow G''$ is a group homomorphism ($\beta\alpha$ means $\beta \circ \alpha$). In your proof, do not omit the operation symbols \triangle , \square , and/or \oplus ; include them explicitly.