Math 110A—Writing Assignment 08

Due: Sunday April 07, by 7PM

Getting Started

1. Get the template for this assignment. Here's how to do it:
   - Go to https://v2.overleaf.com/, and **make sure you are logged in**.
   - In a new window, go here:

     https://v2.overleaf.com/read/yfhqcxpmhjdw

   - Click on the menu icon in the upper-left and select "Copy Project"
   - When ask for a name, choose something like "Math 110A - WA 08" and click "Copy"
   - When this completes you will be back in your own workspace (instead of mine).
   - After solving the problem(s), type them up using the template.
   - Email me your final draft.
2. Let me know if you have any questions!

If you have trouble finding the command for a math symbol you want to use, try looking in this document:

http://mirror.hmc.edu/ctan/info/short-math-guide/short-math-guide.pdf

Please type up your proofs to each of the following problems in LaTeX. Make sure to use complete sentences and appropriate punctuation. Also, make sure to edit for typos. Email me your final draft.

And please email me if you have any questions!

1. Let G be a group, and let $g \in G$. Define $\phi_g : G \to G$ via $\phi_g(x) = gxg^{-1}$. Prove that ϕ_g is an isomorphism from G to G.
   (See Theorem 3.63.)
2. Suppose that G is a group, and let $g \in G$ with $|g| = n$. Prove that if $g^i = g^j$ then n divides $i - j$.
   (See Theorem 4.24, but I'm only asking you to prove one direction of the "if and only if".)