

# MATH 110A—WRITING ASSIGNMENT 04

Due: Sunday February 24, by 7PM

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## 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://www.overleaf.com/read/tvfrfbfjkqjk>

- Click on the menu icon in the upper-left and select “Copy Project”
- When ask for a name, choose something like “Math 110A - WA 04” 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 L<sup>A</sup>T<sub>E</sub>X. 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  $r$  denote the  $90^\circ$  clockwise rotation of the square, and let  $s$  denote the reflection over the vertical midline. Prove that  $\{r, s\}$  is a minimal generating set for  $D_4$ .  
(See Problem 2.56. Remember, you need to prove that  $\{r, s\}$  is a generating set, **and** you need to show that it is a *minimal* generating set.)
2. Prove that if  $(G, *)$  is a finite group, then each element of  $G$  appears exactly once in each row and each column, respectively, in any group table for  $G$ .  
(See Theorem 2.63.)