

# MATH 161—WRITING ASSIGNMENT 03

Due: Sunday September 23—5:00PM

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## Getting Started

1. Re-read the [Learning L<sup>A</sup>T<sub>E</sub>X](#) document here:

<https://v2.overleaf.com/read/zkfgxndfnbcb>

2. Get the template for this assignment. Here's how to do it:

- Go to <https://v2.overleaf.com/> (formerly: <https://www.sharelatex.com>), and **make sure you are logged in**.
- In a new window, go here:

<https://v2.overleaf.com/read/zvtzgcxzvkjt>

- Click on the menu icon in the upper-left and select “Copy Project”
- When ask for a name, choose something like “Math 161 - WA 03” 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.

3. Let me know if you have any questions!

1. Let  $\mathcal{L}$  be any language and  $\mathcal{M}$  any  $\mathcal{L}$ -structure. Prove that there exists a set of  $\mathcal{L}$ -sentences  $\Delta$  (which can be finite or infinite) such that the universe of  $\mathcal{M}$  is infinite if and only if  $\mathcal{M} \models \Delta$ .

*Note: you will have to define your  $\Delta$  **and** prove that it works.*

*You will see in the template that I got you started, but please feel free to write it up differently.*