

# Logic: Homework

A Feast of Double Negation

12th Formosan Summer School on Logic, Language, and Computation, 2018

Due: 9:10AM, Monday, 16 July 2018

1. Derive  $\vdash \neg\neg(\neg\neg A \rightarrow A)$  in NJ.
2. Let  $\Gamma := \neg\neg(A \vee B), \neg\neg A \rightarrow \neg\neg C, \neg\neg B \rightarrow \neg\neg C$ . Derive  $\Gamma \vdash \neg\neg C$  in NJ.

Notes:

- Please include the names (like “ $\rightarrow I$ ”) of the rules used in your derivations.
- You are encouraged to discuss with TAs and friends — these two derivations are not easy!
- These two derivations correspond to two of the cases in the inductive proof of Glivenko’s theorem. Why? (This is just something more for you to think about; you do *not* need to give me an answer to this question.)