## Mathematics 2200H – Mathematical Reasoning TRENT UNIVERSITY, Fall 2024

## Assignment #2 Propositional Logic Due on Friday, 20 September..\*

All references are to the pretty minimal system of propositional logic described in class, and also in the handout A Minimal System of Propositional Logic – The Short Form.

- Determine the possible lengths, as sequences of symbols, of (official) formulas of this system.
  [4]
- **2.** Use a truth table to verify that whenever the formulas  $(\alpha \to (\beta \to \gamma))$  and  $\beta$  are both true, then the formula  $(\alpha \to \gamma)$  is also true. [2]
- **3.** Use a deduction to verify that whenever the formulas  $(\alpha \to (\beta \to \gamma))$  and  $\beta$  are both true, then the formula  $(\alpha \to \gamma)$  is also true. [4]

## A logic limerick:

A Theorem fine is Deduction, For it allows work-reduction: To show "A implies B", Assume A and prove B; Quite often a simpler production.

<sup>\*</sup> Please submit your solutions, preferably as a single pdf, via Blackboard's Assignments module. If that fails, please submit them to the instructor on paper or via email to sbilaniuk@trentu.ca as soon as you can,