

MATHEMATICAL LOGIC — ASSIGNMENT ONE

- (1) Prove $\vdash (\neg P \supset P) \vee (P \supset \neg P)$.
- (2) Show that in every bounded distributive complemented lattice each element has a unique complement.
- (3) Let T be a topological space. Consider the collection

$$C = \{S \subseteq X : S \text{ is open in } T \text{ and } S \text{ is closed in } T\} .$$

Prove that $\langle C; \subseteq \rangle$ is a Boolean algebra.

Each question is worth 12 points. The points in all the four assignments will be added together and the result will be divided by 4, and this will be the final result. Remember to mark your answer sheet with your name.

Date: Apr 4th, 2022.