Definition 1

Define a set $\mathcal{F}$ of all formulas of a propositional language $\mathcal{L}_{\{\neg, \cup, \cap, \Rightarrow\}}$. 
Definition 2

Given the truth assignment (in classical semantics)

\[ v : VAR \rightarrow \{ T, F \} \]

Define its extension \( v^* \) to the set \( F \) of all formulas of \( \mathcal{L}_{\{\neg, \cup, \cap, \Rightarrow\}} \).

Definition 3

Given a set \( G \subseteq F \) of formulas of \( \mathcal{L}_{\{\neg, \cup, \cap, \Rightarrow\}} \)

Complete the definition below (classical semantics)

A truth assignment \( v : VAR \rightarrow \{ T, F \} \)

is a model for the set \( S \) of formulas if and only if
Definition 4

Complete the definition below (classical semantics)

A formula $A$ is called **independent** from a set $G \subseteq \mathcal{F}$ if and only if

Definition 5

Complete the definition below

A set $G \subseteq \mathcal{F}$ is **consistent** if and only if
Definition 6

Complete the definition below

By a **proof system** we understand a quadruple \( S = (\mathcal{L}, \mathcal{E}, LA, \mathcal{R}) \), where

Definition 7

Complete the definition below

**Formal Proof** of an expression \( E \in \mathcal{E} \) in a proof system \( S = (\mathcal{L}, \mathcal{E}, LA, \mathcal{R}) \) is a sequence

\[
A_1, A_2, \ldots, A_n \quad \text{for} \quad n \geq 1
\]

of expressions from \( \mathcal{E} \), such that
Definition 8

Complete the definition below

Given a proof system $S = (L, \mathcal{E}, LA, R)$

We say that the system $S$ is **sound** under a semantics $M$ iff the following conditions hold

Definition 9

State the

*Soundness Theorem* for $S$ and semantics $M$

Definition 10

State the

*Completeness Theorem* for $S$ and semantics $M