Propositional logics

- Sentence, negation, conjunction (and), disjunction (or), implication and bi-conditional $S, \neg S, \wedge, \vee, \Rightarrow, \Leftrightarrow$
- Truth table ($KB \vDash \alpha$: KB is true, α is true)
- De Morgan rule and distribution rule
- $A \Rightarrow B = \neg A \vee B, A \Leftrightarrow B = (A \Rightarrow B) \wedge (B \Rightarrow A)$
- CNFs, DNFs
- Example: Homework 4

Valid, Satisfiable

- Valid: always true. $KB \models \alpha$ iff. $KB \Rightarrow \alpha$ is valid
- Satisfiable: can be true.
- Unsatisfiable: always false

- Proof: $\frac{\alpha}{\beta}$: $\alpha \Rightarrow \beta$

- All these symbols are simply want to avoid reusing of $\Rightarrow$, —, $\models$, $\vdash_i$