Inference algorithms

- Algorithm i: $KB \vdash_i \alpha$

- α can be inferred with knowledge KB and algorithm i

- Soundness: $KB \vdash_i \alpha \Rightarrow KB \vDash \alpha$

  - e.g. a nice judgement: all α can be inferred: not sound

- Completeness: $KB \vdash_i \alpha \Leftarrow KB \vDash \alpha$

  - e.g. say no to all sentence? Not complete.

Propositional logics

- Sentence, negation, conjunction (and), disjunction (or), implication and bi-conditional $S, \neg S, \wedge, \vee, \Rightarrow, \Leftrightarrow$

- Truth table ($KB \models \alpha$: 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