CS221 Fall 2018 - 2019 Homework 8

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By turning in this assignment, I agree by the Stanford honor code and declare that all of this is my own work.

Problem 4: Logical Inference

(a)

$$\begin{aligned} KB &= \{(A \vee B) \rightarrow C, A\} \\ &= \{\neg(A \vee B) \vee C, A\} \\ &= \{(\neg A \wedge \neg B \vee C, A\} \\ &= \{(\neg A \vee C) \wedge (\neg B \vee C), A\} \\ &= \{A \rightarrow C, B \rightarrow C, A\} \\ &= \{C, B \rightarrow C\} \end{aligned}$$

(b)

$$\begin{aligned} KB &= \{A \vee B, B \rightarrow C, (A \vee C) \rightarrow D\} \\ &= \{A \vee B, \neg B \vee C, \neg(A \vee C) \vee D\} \\ &= \{A \vee B, \neg B \vee C, (\neg A \wedge \neg C) \vee D\} \\ &= \{A \vee B, \neg B \vee C, (\neg A \vee D) \wedge (\neg C \vee D)\} \\ &= \{B \vee D, \neg B \vee C, \neg C \vee D\} \\ &= \{D \vee C, D \vee \neg C\} \\ &= \{D\} \end{aligned}$$