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CS-541 - HW4 - Logic

4) a)

KB	CNF	KB
$A \rightarrow (B \vee C)$	$\Rightarrow$	$\neg A \vee B \vee C$
$B \rightarrow D$		$\neg B \vee D$
$C \rightarrow E$		$\neg C \vee E$

1) $(\neg A \vee B \vee C), (\neg B \vee D) \models (\neg A \vee D \vee C)$
2) $(\neg A \vee D \vee C), (\neg C \vee E) \models (\neg A \vee D \vee E)$
3) add $\neg E$ and look for contradiction
4) $(\neg A \vee D \vee E), (\neg E) \models (\neg A \vee D)$

1) $\neg A \vee D \vee C$
2) $\neg A \vee D \vee E$
3) $\neg E$
4) $\neg A \vee D$

No contradiction, therefore cannot derive E

b)

KB	CNF	KB
$B \rightarrow A$	$\Rightarrow$	$\neg B \vee A$
$(B \rightarrow C) \rightarrow D$		$(B \vee D) \wedge (\neg C \vee D)$

1) $(B \vee D) \wedge (\neg C \vee D) \models (B \vee D), (\neg C \vee D)$
2) $\neg B \vee A, B \vee D \models (A \vee D)$
3) add $\neg D$ and look for contradiction
4) $(A \vee D), (\neg D) \models A$

1.a) $B \vee D$
1.b) $\neg C \vee D$
2) $A \vee D$
3) $\neg D$
4) A

No contradiction, therefore cannot derive D