Q Spring 2024

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Assignment 3

Sunday, April 28, 2024

3:51 PM

#1 ALYES

Α	8	7(A ^B)	(74 × 7 B)
т	т	F	F
Т	F	τ	τ
F	τ	τ	т
F	F	τ	т

b) YES

P	R	(P → R)	(7R→7P) T	
т	Т	Т		
т	F	F	£	
۴	Т	т	т	
۴	F	т	т	

c) NO

P	R	(P→R) (7P → 7R	
Т	т	Т	Т
τ	F	E	Ţ
F	Т	Ţ	F
F	F	т	т

d) YES

ρ	0	(P → 0)	7P V Q
τ	т	т	т
т	F	F	F
F	т	τ	т
F	F	т	Т

#2

Α	В	۷	AVB	TLVA
τ	Т	Т	Т	Т
т	Т	E	Т	Т
Т	F	T	Т	Т
Т	F	F	т	Т
F	Т	Т	Ť	F
F	T	F	Ť	Т
F	F	т	F	F
F	F	F	F	7

(3)

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■ Inference - sound - derrives only sentences entailed by EB

Complete - derrives and sentences entailed by EB









#3 S = A AC is not entailed by KB

4 Ex: A = T, B = T, C = F is T for both modles in the KB, but is F for S

4	C	A ^ C	
Т	Т	т	
I	E	Ĕ	
F	т	F	
F	F	۴	
	1 1		

- Note: KB logically entails S if all the models that evaluate KB to be true ALSO evaluate S to True

#4 S=AVBVC is not entailed by KB

IL Ex: A: F, B: F, C: F is T for TCVA but F for S

Α	В	C	AVBVC
Т	٦	Т	т
τ	τ	F	τ
т	F	т	τ
т	F	F	т
F	τ	٢	т
F	F T	т	т
F	τ	F	τ
£	E	E	<u>E</u>

#5 Proof by Resolution

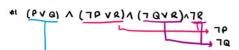
KB: P V Q , P > R, Q > R

Quen: Q

a) Put KB 1 75 into CNF (Conjunctive Normal Form):

(PVQ) A (TPVR)A (TQVR)ATR

b) Perform sequence of inferences, concluding KB does not entail 5:



#2 (PVQ) 1 7P 1 7Q - Nothing! Thus, empty () and KB entails S

#6 Proof by Resolution

KB: P -> Q , TP -> R

Query: 7 Q -> 7R

a) Put KB 1 75 into CNF (Conjunctive Normal Form):

(TP V Q) A(PV R)A (GAR)

b) Perform sequence of inferences, concluding KB does not entail 5:

(O VR) A (O A R) -> No way to get an empts (), KB does not entail 5

