**CPT\_S 540 HW4**

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1. (a) s1: ¬LikesRA ^ ¬LikesRC,

s2: ¬LikesDA ^ ¬LikesDT,

s3: ¬LikesBC ^ ¬LikesDC,

(b) s4: ¬LikesBC ^ ¬LikesDC ^ ¬LikesRC ⇒ LikesJC

s5: LikesBC v LikesDC v LikesRC v LikesJC (elimination ⇒ from s4)

(c) s6: ¬LikesRC (using and elimination from s1)

s7: LikesBC v LikesDC v LikesJC (from {s6, s5} ⊨ LikesBC v LikesDC v LikesJC)

s8: LikesJC (from {s7, s3} ⊨ LikesJC)

(d)

s9: LikesDC v LikesDA v LikesDT v LikesDP (from KB)

s10: LikeDP ^ ¬LikesBC (from {s10, s3, s2} ⊨ LikeDP ^ ¬LikesBC)

s11: LikeDP (and elimination from s11)

s12: LikesRC v LikesRA v LikesRT v LikesRP (from KB)

s13: LikesRT v LikesRP from (from {s12, s1} ⊨ LikeRT ^ LikesRC)

s14: LikesDP ^ ¬LikesRP ^ ¬LikesBP ^ ¬LikesJP (from KB)

s15: ¬LikesRP (and elimination from s14)

s16: LikesRT (from {s13, s15} ⊨ LikeRT)

s17: LikesBA (from s16 ^ s11 ^ s8 ⇒ LikesBA)

(e) LikesRT (from {s13, s15} ⊨ LikeRT)

1. (a) s1: ¬Likes(Raj, Armageddon) ^ ¬Likes(Raj, Checkers),

s2: ¬Likes(Dmitri, Armageddon) ^ ¬Likes(Dmitri, Tetris),

s3: ¬Likes(Bubba, Checkers) ^ ¬Likes(Dmitri, Checkers),

(b) s4: ∀x ¬Likes(Raj, x) ^ ¬Likes(Dmitri, x) ^ ¬Likes(Budda, x) ^ Likes(Jin, x)

(c) ¬Likes(Raj, x) ^ ¬Likes(Dmitri, x) ^ ¬Likes(Budda, x) ^ Likes(Jin, x) ^ (x=Checkers)

s5: ¬Likes(Raj, Checkers) ^ ¬Likes(Dmitri, Checkers) ^ ¬Likes(Budda, Checkers) ^ Likes(Jin, Checkers)

s6: Likes(Jin, Checkers) ^ ¬Likes(Raj, Armageddon), (from {s5, s1 ^ s3}⊨ Likes(Jin, Checkers) ^ ¬Likes(Raj, Armageddon))

s7: Likes(Jin, Checkers) (from any elimination from s6)

(d) s8: ∀x ∀y Likes(y, x) ^ ¬Likes(y, ¬x)

∃x ∀y