8	$\{(xRu \wedge xRv \wedge yRu \wedge yRv \rightarrow yRx)\}$	7, γ-EXPANSION
9	$\{\neg xRu, \neg xRv, \neg yRu, \neg yRv, yRx\}$	8, β-EXPANSION
10	$\{\exists fg. \neg(\alpha Rf \wedge fRg \rightarrow \alpha Rg)\}$	3, δ EXPANSION
11	$\{\exists g. \neg(\alpha Rb \wedge bRg \rightarrow \alpha Rg)\}$	10, δ EXPANSION
12	$\{\neg(\alpha Rb \wedge bRc \rightarrow \alpha Rc)\}$	11, δ EXPANSION
13	$\{\alpha Rb \wedge bRc\}$	12, α- EXPANSION
14	$\{\neg\alpha Rc\}$	12, α- EXPANSION
15	$\{\alpha Rb\}$	13, α- EXPANSION
16	$\{bRc\}$	13, α- EXPANSION
17	$\{\neg\alpha Rv, vRa\}$	9, 4 RESOLUTION
18	$\{bRa\}$	17, 15 RESOLUTION
19	$\{\neg\alpha Ru, \neg\alpha Rv, \neg bRu, \neg bRv\}$	9, 14 RESOLUTION
20	$\{\neg bRa\}$	19, 4 RESOLUTION
21	$\emptyset$	18, 20 RESOLUTION

UNIFICATION

- $\{\forall x Rx\} \mapsto \{xRx\}$
- $\{\forall u v x y (xRu \wedge xRv \wedge yRu \wedge yRv \rightarrow yRx)\} \mapsto$

  $\{xRu \wedge xRv \wedge yRu \wedge yRv \rightarrow yRx\} \mapsto$

$\mapsto \{\neg(xRu \wedge xRv \wedge yRu \wedge yRv \vee yRx)\}$

$\mapsto \{\neg xRu \vee \neg xRv \vee \neg yRu \vee \neg yRv \vee yRx\}$

$\mapsto \{\neg xRu, \neg xRv, \neg yRu, \neg yRv, yRx\}$

- $\{\neg\forall efg(eRf \wedge fRg \to eRg)\} \mapsto \{\exists efg.\neg(eRf \wedge fRg \to eRg)\}$

$\mapsto \{\neg(aRb \wedge bRc \to aRc)\} \mapsto \{aRb \wedge bRc \wedge \neg aRc\}$

$\mapsto \{aRb\}, \{bRc\}, \{\neg aRc\}$

$C(F) = \{\{\exists x Rx\}, \{\neg xRu, \neg xRv, \neg yRu, \neg yRv, yRx\}, \{aRb\},$

$\{bRc\}, \{\neg aRc\}\}$

$\{\neg xRu, \neg xRv, \neg yRu, \neg yRv, yRx\}$ $\{\neg aRc\}$

(A)

$\{\neg cRu, \neg cRv, \neg aRu, \neg aRv\}$ $\{aRb\}$

(B)

$\{\neg cRb, \neg aRb\}$ $\{bRc\}$

(C)

$\{\neg bRb\}$ $\{xRx\}$

(D)

$\emptyset$

(A) $C_1 = \{\neg xRu, \neg xRv, \neg yRu, \neg yRv, yRx\}$ $E_1 = \{yRx\}$

$C_2 = \{\neg aRc\} = E_2$

$F_1 = E_1 \cup \tilde{E}_2 = \{yRx, aRc\}$ $S_1 = \left[\frac{a}{y}\right]$

$F_2 = F_1 S_1 : \{aRx, aRc\}$ $S_2 = \left[\frac{c}{x}\right]$

$F_3 = F_2 S_2 : \{aRc\}$ $S = S_1 S_2$

$R(C_1.C_2) = (C_1 \setminus E_1 \cup C_2 \setminus E_2)\,S = \{\neg xRu, \neg xRv, \neg yRu, \neg yRv\}\left[\frac{a}{y}, \frac{c}{x}\right]$

$= \{\neg cRu, \neg cRv, \neg aRu, \neg aRv\}$

(B) $C_1 = \{\neg cRu, \neg cRv, \neg aRu, \neg aRv\}$ $E_1 = \{\neg aRu, \neg aRv\}$

$C_2 = \{aRb\} = E_2$ $F_1 = \overline{E_1} \cup E_2 = \{aRu, aRv, aRb\}$ $S_1 = \left[\frac{b}{u}\right]$

$F_2 = \{aRu, aRb\}$ $S_2 = \left[\frac{b}{v}\right]$ $F_3 = \{aRb\}$

$R(C_1, C_2) = \{\neg cRu, \neg cRv\}\left[\frac{b}{u}, \frac{b}{v}\right] = \{\neg cRb, \neg cRb\}$

(C) $C_1 = \{\neg cRb, \neg cRb\}$ $E_1 = \{\neg cRb\}$ $C_2 = \{bRc\} = E_2$

$F_1 = \{cRb, cRb, bRc\}$ $S_1 = \left[\frac{b}{c}\right]$ $F_2 = \{cRb, bRb\}$

$R(C_1, C_2) = \{\neg cRb\}\left[\frac{b}{c}\right] = \{\neg bRb\}$

(D) $C_1 = \{\neg bRb\} = E_1$ $C_2 = \{xRx\} = E_2$ $F_1 = \{bRb, xRx\}$

$S_1 = \left[\frac{b}{x}\right]$ $F_2 = \{bRb\}$ $R(C_1, C_2) = \emptyset$