

1.

1. $A \supset \sim(B \supset C) \quad \therefore A \supset B$

2. $\sim A \vee \sim(B \supset C) \quad 1, \text{Imp.}$

3. $\sim A \vee \sim(\sim B \vee C) \quad 2, \text{Imp.}$

4. $\sim A \vee (\sim \sim B \cdot \sim C) \quad 3, \text{De. M.}$

5. $\sim A \vee (B \cdot \sim C) \quad 4, \text{DN.}$

6. $(\sim A \vee B) \cdot (\sim A \vee \sim C) \quad 5, \text{Dist.}$

7. $\sim A \vee B \quad 6, \text{Simp.}$

8. $A \supset B \quad 7, \text{Imp.}$

- 0.
1. $A \supset B \therefore (A \cdot C) \supset B$
 2. $(A \supset B) \vee \sim C$ _____ 1 Add
 3. ~~$(A \supset B) \vee \sim C$~~ $(\sim A \vee B) \vee \sim C$ _____ 2 Impl
 4. $\sim C \vee (\sim A \vee B)$ _____ 3 Comm
 5. $(\sim C \vee \sim A) \vee B$ _____ 4 Assoc
 6. $(\sim A \vee \sim C) \vee B$ _____ 5 Comm
 7. $\sim (A \cdot C) \vee B$ _____ 6 DeM
 8. $(A \cdot C) \supset B$ _____ ~~7~~ Impl

3. $\text{D}^0(\text{RVS}) \rightarrow (\text{T.U})$

2. $\sim \text{R}^0(\text{V} \sim \text{V} \sim \text{V})$

3. $\sim \text{T} / \therefore \sim \text{V}$

4. $\sim \text{T} \sim \text{V} \sim \text{U}$ ————— 3 Add

5. $\sim (\text{T.U})$ ————— 4 DeM

6. $\sim (\text{RVS})$ ————— 1, 5 MT

7. $\sim \text{R} \cdot \sim \text{S}$ ————— 6 DeM

8. $\sim \text{R}$ ————— 7 Simp

9. $\text{V} \sim \text{V} \sim \text{V}$ ————— 2, 8 MP

10. $\sim \text{V} \sim \text{V} \sim \text{V}$ ————— 9 Simpl

11. $\sim \text{V}$ ————— 10 Tauf

4. $\text{D}^0(\text{NT} \supset \text{G})$

2. $\sim \text{G} \cdot \text{D} / \therefore \sim \text{N}$ ————— 9 Comm

3. $\text{D} \cdot \sim \text{G}$ ————— 3 Simp

4. D ————— 1, 4 MP

5. $\text{NT} \supset \text{G}$ ————— 2 Simp

6. $\sim \text{G}$ ————— 5, 6 MT

7. $\sim \text{N}$ —————