

#12 $A' \wedge B \wedge [B \rightarrow (A \vee C)] \rightarrow C$

1. A' hyp
2. B hyp
3. $B \rightarrow (A \vee C)$ hyp
4. $A \vee C$ 2, 3, mp
5. $(A')' \vee C$ 4, dn
6. $A' \rightarrow C$ 5, imp
7. C 1, 6 mp

#15 $(A \rightarrow B) \wedge [A \rightarrow (B \rightarrow C)] \rightarrow (A \rightarrow C)$

1. $A \rightarrow B$ hyp
2. $A \rightarrow (B \rightarrow C)$ hyp
3. A hyp (deduction method)
4. B 3, 1, mp
5. $B \rightarrow C$ 3, 2, mp
6. C 4, 5, mp

#27 $(Q' \rightarrow P') \rightarrow (P \rightarrow Q)$

1. $Q' \rightarrow P'$ hyp
2. P hyp (ded. method)
3. $(P')'$ 2, dn
4. $(Q')'$ 3, 1, mt
5. Q 4, dn ✓

#45 If chicken is on the menu, then don't order fish, but you should have either fish or salad. So if chicken is on the menu, order salad. (CFS)

$(C \rightarrow F') \wedge (F \vee S) \rightarrow (C \rightarrow S)$

1. $C \rightarrow F'$ hyp
2. $F \vee S$ hyp
3. C hyp (ded. method)
4. F' 3, 1, mp
5. S 4, 2 ds

OR

5. $F' \rightarrow S$ 2, imp
6. S 4, 5, mp

Nice to know that we frequently have choices!