Derivations Exercises 1

Derivations with NEGATION and CONDITIONAL

ANSWERS QUESTIONS 1-19

Others included all the answers for the first two sections. After that there will be answers only for selected derivations.

For the first set, use Direct Derivation only (also MP, MT, DN and R). Do not use ID or CD.

1. R, R → S, S → T ∴ T

1	**Show** T	show conc	First line is always a show line.
2	R	PR 1	Indent after a show line
3	R → S	PR 2	
4	S → T	PR 3	
5	S	2 3/MP	Line 2 gives the antecedent of line 3
6	T	4 5/MP	Line 5 gives the antecedent of line 4
7		6 DD	Line 6 is the sentence on the show line, derived directly. Box and cancel show (strike through)

2. T → W, W → X, ¬X ∴ ¬T

1	**Show** ¬T		First line is always a show line.
2	T → W	PR 1	
3	W → X	PR 2	
4	¬X	PR 3	
5	¬W	4 3/MT	Line 4 is the negation of the consequent on line 3
6	¬T	5 2/MT	Line 5 is the negation of the consequent on line 2
7		6 DD	Line 6 is the sentence on the show line, derived directly. Box and cancel show (strike through)

3. ¬¬P, ¬¬P → Q ∴ ¬¬Q

1	**Show** ¬¬Q	show conc	First line is always a show line.
2	P	PR 1 DN	I don't have to list the premises, I can just refer to them. Line 2 is the double negated first premise.
3	P → Q	PR 2 DN	Now I am using DN on the second premise
4	Q	2 3/MP	Line 2 is the antecedent of line 3
5	¬¬Q	4 DN	I have to double negate line 4 to reach my goal.
6		5 DD	Line 5 is the sentence on the show line, derived directly. Box and cancel.