CRITICAL THINKING

Workshop #7

Identifying Valid Argument Forms

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Explanation of Annotations for These Solutions

The problem is in black Futura Std type.

The solution is in red Garamond Premier Pro type.

Any commentary is in blue Futura Std type.

Please Note: When solving these types of problems for a quiz or an exam, you are expected to format your own solutions in a similar manner as I have done on these slides. Failure to do so may result in a small penalty for not following instructions or even a larger penalty because I do not understand your solution.

Part I Solutions

1. 1. $X \rightarrow Y$.

$\therefore$ $X \rightarrow (X \,\&\, Y)$.

2. $X \rightarrow (X \,\&\, Y)$. 1; Abs.

2. 1. $(A \,\&\, B) \rightarrow C$.
   2. $\sim C$.

$\therefore$ $\sim(A \,\&\, B)$.

3. $\sim(A \,\&\, B)$. 1, 2; M.T.

Part I Solutions

3. 1. $(W \vee X) \rightarrow \sim(W \rightarrow X)$.
   2. $W \vee X$.

   $\therefore$ $\sim(W \rightarrow X)$.

   3. $\sim(W \rightarrow X)$. 1, 2; M.P.

4. 1. $\sim(M \rightarrow \sim N) \vee (Q \,\&\, R)$.
   2. $\sim\sim(M \rightarrow \sim N)$.

   $\therefore$ $Q \,\&\, R$.

   3. $Q \,\&\, R$. 1, 2; D.S.

Part I Solutions

5. 1. $[(W \vee \sim X) \rightarrow D] \ \& \ (H \vee R)$.

$\therefore$ $(W \vee \sim X) \rightarrow D$.

2. $(W \vee \sim X) \rightarrow D$. 1; Simp.

6. 1. $(E \rightarrow F) \rightarrow G$.

$\therefore$ $(E \rightarrow F) \rightarrow [(E \rightarrow F) \ \& \ G]$.

2. $(E \rightarrow F) \rightarrow [(E \rightarrow F) \ \& \ G]$. 1; Abs.

Part II Solutions

1. 1. $(A \vee B) \rightarrow C$.
   2. $(C \vee B) \rightarrow [A \rightarrow (D \vee E)]$.
   3. $A \ \& \ D$.

   $\therefore$ $D \vee E$.

   4. A. — 3; Simp.
   5. $A \vee B$. — 4; Add.
   6. C. — 1, 5; M.P.
   7. $C \vee B$. — 6; Add.
   8. $A \rightarrow (D \vee E)$. — 2, 7; M.P.
   9. $D \vee E$. — 8, 4; M.P.

Part II Solutions

2. 1. $W \rightarrow X$.
   2. $(W \rightarrow Y) \rightarrow (Z \vee X)$.
   3. $(W \& X) \rightarrow Y$.
   4. $\sim Z$.

   $\therefore$ X.

   5. $W \rightarrow (W \& X)$. — 1; Abs.
   6. $W \rightarrow Y$. — 5, 3; H.S.
   7. $Z \vee X$. — 2, 6; M.P.
   8. X. — 7, 4; D.S.

Next Class…

We will begin proofs with no steps given, and that require more than one step to solve.