

Introduction to Logic

Practice Exam for Unit/Exam 2:

Instructions. For each of the following arguments, construct a formal derivation of the conclusion from the premises. (The premises are above the line, the conclusion below the line.)

- 1) $(P \rightarrow \sim Q) \ \& \ (Q \vee R)$
 $T \rightarrow (R \rightarrow H)$
 $T \ \& \ \sim H$

 $\text{SHOW } S \vee \sim P$
- 2) $(S \vee P) \leftrightarrow (\sim T \rightarrow \sim R)$
 $\text{SHOW } (R \ \& \ S) \rightarrow T$
- 3) $(A \vee B) \vee C$
 $A \rightarrow C$
 $(\sim C \vee A) \rightarrow \sim(B \vee C)$

 $\text{SHOW } C$
- 4) $D \vee \sim C$
 $\sim D \rightarrow (B \rightarrow C)$

 $\text{SHOW } [A \rightarrow (B \vee C)] \rightarrow (A \rightarrow D)$
- 5) $(P \vee Q) \rightarrow \sim R$
 $P \vee [S \ \& \ \sim(S \ \& \ \sim R)]$

 $\text{SHOW } R \leftrightarrow \sim P$
- 6) $T \rightarrow S$
 $T \vee (\sim S \rightarrow T)$
 $(Q \rightarrow R) \rightarrow P$

 $\text{SHOW } S \ \& \ (P \vee Q)$
- 7) $(M \ \& \ N) \vee (\sim M \ \& \ \sim N)$
 $\text{SHOW } M \leftrightarrow N$
- 8) $P \rightarrow R$
 $\sim R \vee (R \rightarrow \sim R)$

 $\text{SHOW } \sim(P \vee R)$