

**TFL Natural Deduction with Conditionals Exercise 2**  
PHI 154 (Eliot) Fall 2020

For each argument, construct a proof using the natural deduction system described in Chapter 16. The inference rules we have learned at this point are  $\vee$ I,  $\vee$ E,  $\wedge$ I,  $\wedge$ E,  $\rightarrow$ I, and  $\rightarrow$ E. The premises are separated by commas, and the conclusion comes after the “therefore” symbol, which is “ $\therefore$ ” (as introduced on page 2).

1.  $(A \vee B) \rightarrow (M \vee N), (V \wedge W) \wedge (A \vee B) \therefore (M \vee N)$
2.  $S \wedge R, P \rightarrow (E \leftrightarrow F), R \rightarrow P \therefore E \leftrightarrow F$
3.  $\neg(W \vee V) \rightarrow (C \leftrightarrow \neg D), B \rightarrow \neg(W \vee V), R \wedge B \therefore C \leftrightarrow \neg D$
4.  $[F \wedge [(G \rightarrow H) \wedge X]], B \wedge C, (X \wedge F) \rightarrow G \therefore H$
5.  $(E \wedge T) \therefore (V \vee O) \rightarrow (T \wedge E)$
6.  $Q \rightarrow R, \neg T \rightarrow Q, P \wedge \neg T \therefore P \rightarrow R$
7.  $(M \vee Y) \rightarrow D, P \rightarrow [J \wedge (M \vee Y)] \therefore P \rightarrow D$
8.  $(H \wedge I) \rightarrow (R \wedge G), H \therefore I \rightarrow G$