

## Proofs V

Construct proofs for each of the following arguments using all the resources at your disposal. Use the [general-purpose proof form](#) or do them on paper.

1.  $H \supset \sim S, (\sim H \vee \sim S) \supset F, F \supset B \text{ // } B$
2.  $\sim A \supset B, A \supset E, B \supset S, (E \vee S) \supset X \text{ // } X$
3.  $P \supset Q, (\sim Q \supset \sim P) \supset S, F \supset \sim S \text{ // } \sim F$
4.  $H \supset S, \sim P \supset \sim S \text{ // } H \supset P$
5. [A  \$\supset\$  B, A  \$\supset\$   \$\sim\$ B,  \$\sim\$ A  \$\supset\$  G // G](#)
6.  $(P \vee P) \supset S, \sim(\sim P \vee (Q \& \sim R)) \text{ // } S$
7.  $B \equiv G, (B \& G) \supset Z, (\sim B \& \sim G) \supset Z \text{ // } Z$
8.  $A \supset B, A \supset \sim B \text{ // } \sim A$
9.  $\sim A \supset S, \sim E \supset S, \sim(A \& E) \text{ // } S \vee H$
10. [A  \$\supset\$  B, B  \$\supset\$   \$\sim\$ A, A  \$\vee\$  B // A  \$\supset\$  \(B  \$\supset\$  E\)](#)
11.  $P \supset (Q \supset R), R \supset (Q \supset S) \text{ // } P \supset (Q \supset S)$
12.  $A \supset B, (A \& B) \supset Q, (H \& Q) \supset S \text{ // } A \supset (H \supset S)$
13.  $(C \equiv D) \& \sim(\sim D \vee E), C \supset (E \vee (F \supset \sim G)), (H \supset G) \& F \text{ // } \sim H$
14.  $\sim(E \supset F), \sim D \equiv E, \sim A \supset D \text{ // } (A \vee B) \& (A \vee C)$
15.  $\sim F \vee C, G \vee D, \sim F \supset \sim G \text{ // } C \vee D$

Prove the following theorems:

1.  $\sim[(A \supset \sim A) \& (\sim A \supset A)]$
2.  $[\sim(\sim A \& \sim B) \& \sim A] \supset B$
3.  $[A \& (B \vee \sim A)] \supset \sim \sim B$
4.  $[\sim A \supset (B \& C)] \equiv [(A \vee B) \& (A \vee C)]$
5.  $A \supset (\sim A \supset \sim B)$

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