

Worksheet Exercise 2.9.D.

Name _____

Deductions, full blast

Class _____ Date _____

Part D. Give deductions for the following arguments, use as many blanks as you need. These are difficult. The rule of Tautology may be useful here. You may want to practice these first on a separate sheet.

(1)

1. $A \supset (B \vee C)$ Prem
 2. $C \equiv B$ Prem $\therefore A \supset B$

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(2)

1. $\sim(A \& B)$ Prem
 2. $(A \vee B) \& (A \vee \sim B)$ Prem $\therefore A \& \sim B$

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(3)

1. $A \supset B$ Prem
 2. $C \supset D$ Prem $\therefore (A \vee C) \supset (B \vee D)$

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(4)

1. $P \supset (Q \& R)$ Prem
 2. $(Q \vee R) \supset S$ Prem
 3. $P \vee S$ Prem $\therefore S$

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1. $(A \vee B) \supset (A \supset \sim B)$ Prem (#5)
 2. $(B \& \sim C) \supset (A \& B)$ Prem
 3. $\sim A \supset B$ Prem $\therefore A \vee C$

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- 1. $\sim(T \& R)$ Prem (#6)
- 2. $(P \supset Q) \& (R \supset S)$ Prem
- 3. $T \& (P \vee R)$ Prem
- 4. $\sim Q \equiv S$ Prem $\therefore \sim R \& \sim S$

- 1. $G \supset F$ Prem (#7)
- 2. $(D \supset A) \& (E \supset B)$ Prem
- 3. $G \vee (D \vee E)$ Prem
- 4. $\sim(F \vee C)$ Prem
- 5. $B \supset C$ Prem $\therefore A$

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- 1. $(E \vee R) \equiv D$ Prem (#8)
- 2. $(K \supset L) \& (G \supset H)$ Prem
- 3. $(\sim E \vee L) \supset (D \vee G)$ Prem
- 4. $\sim(D \vee L)$ Prem $\therefore E \vee H$

- 1. $(N \& E) \vee (N \& H)$ Prem (#9)
- 2. $(B \vee P) \equiv \sim(B \& K)$ Prem
- 3. $(E \vee P) \supset \sim N$ Prem
- 4. $H \supset B$ Prem $\therefore \sim K$

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- 1. $(K \& L) \supset \sim M$ Prem (#10)
- 2. $S \supset (M \& P)$ Prem
- 3. $T \supset (Q \& R)$ Prem
- 4. $L \& (S \vee T)$ Prem
- 5. $K \equiv L$ Prem $\therefore Q \vee \sim L$

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