

Max Shw

I pledge my honor that I have abided by the
Stevens Honor System

- Max Shw

Problem Set 1 (5/35)

1. a. $P \equiv (p \rightarrow q) \vee (q \rightarrow p)$

$$\equiv (\neg p \vee q) \vee (\neg q \vee p)$$

Conditional Identity x2

$$\equiv \neg p \vee (q \vee \neg q) \vee p$$

Associative Law

$$\equiv \neg p \vee T \vee p$$

Complement Law

$$\equiv T$$

Domination Law x2

1. b. $P \equiv (p \wedge (p \rightarrow q)) \vee \neg((\neg p \vee q) \wedge p)$

$$\equiv (p \wedge (\neg p \vee q)) \vee \neg((\neg p \vee q) \wedge p)$$

Conditional Identity

$$\equiv (p \wedge (\neg p \vee q)) \vee \neg(p \wedge (\neg p \vee q))$$

commutative law

$$\equiv T$$

Complement Law

2. Let getting a job = J

buying a new car = C

buying a house = H

For sections A and B

a. A. $J \rightarrow (C \vee H)$

Invalid argument.

B. $\frac{\neg H}{\therefore \neg J}$

Counter example: If J is true, C is true,
and H is false, All hypotheses are
true but the conclusion is false.

b. A. $(C \wedge H) \rightarrow J$

B. $\neg J$

C. $\frac{H}{\therefore \neg C}$

Valid Argument.

1. $(C \wedge H) \rightarrow J$ Hypothesis, A

2. $\neg J$ Hypothesis, B

3. $\neg(C \wedge H)$ Modus Tollens, 1 & 2

4. $\neg C \vee \neg H$ De Morgan's Law

5. H Hypothesis, C

6. $\neg C$ Disjunctive Syllogism, 4 & 5