

CSC242: Homework 2.2

AIMA Chapter 7.0–7.4

1. Complete truth tables for the following formulas:

(a) $\neg P$

(b) $P \Rightarrow Q$

(c) $\neg Q \Rightarrow \neg P$

(d) $\neg P \Rightarrow \neg Q$

(e) $P \wedge (Q \vee R)$

(f) $(P \wedge Q) \vee (P \wedge R)$

2. Briefly and specifically define *entailment*. Why is it important?

3. Establish by model checking whether $(P \Rightarrow Q) \models (\neg Q \Rightarrow \neg P)$.

4. Establish by model checking whether $\{P, P \Rightarrow Q\} \models Q$.

5. Suppose you are using model checking to determine whether $\alpha \models \beta$ for some sentences α and β . You find that there are no models of α . What should you conclude?