Phil 225 – Symbolic Logic

HW #4

Due February 25, 2011

For each of the following, determine whether the last sentence is a tautological consequence of its premises. If so, give a derivation of it from those premises. If not, give an assignment of truth values to the sentential letters that makes the premises true and the conclusion false.

1) P 🡪 (~Q 🡪 R)

 ~R

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 P 🡪 Q

2) P 🡨🡪 (R V ~P)

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 R

3) P 🡪 (~Q 🡪 R)

 Q

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 ~ (P 🡪 R)

4) P 🡨🡪 (R V ~P)

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 ~R

5) Exactly one of (a) and (b) is a consequence of the premises. For the one that is, give a derivation. For the one that is not, give an appropriate assignment of truth values.

 (R 🡪 S) V (R ^ ~T)

 R ^ (T 🡨🡪 ~S)

 (a) ~S (b) ~T

6) Derive the last sentence from the given premises.

 (Q 🡪R) 🡪 ~P

 S V R

 (U 🡪 ~P) 🡪 ~Q

 T 🡪 Q

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 ~T V S