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