CSE 4/563 Knowledge Representation
Professor Shapiro
Homework 3
Maximum Points: 18
Due: 2:00 PM, Thursday, October 1, 2009

Name(s)⟨user name(s)⟩: _____

September 24, 2009

You must turn in the answers to this homework set as hard-copy on $8\frac{1}{2} \times 11$ in. paper, with your name(s) and user name(s) at the top. Staple multiple pages once in the upper-left hand corner. Write extremely neatly. Anything unreadable will be considered incorrect.

1. (6) Using the Fitch-style proof theory presented in lecture, prove that

$$\vdash (A \Rightarrow P) \wedge (B \Rightarrow Q) \Rightarrow (A \wedge B \Rightarrow P \wedge Q)$$

2. (6) Using the Fitch-style proof theory presented in lecture, prove that

$$\vdash (A \Rightarrow B) \Rightarrow (A \vee C \Rightarrow B \vee C)$$

3. (6) Using the Fitch-style proof theory presented in lecture, prove that

$$\vdash (A \Leftrightarrow B) \Rightarrow (\neg A \Leftrightarrow \neg B)$$