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

Name(s)\langle user name(s)\rangle: ________________________________

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
\[
\vdash (A \Rightarrow P) \land (B \Rightarrow Q) \Rightarrow (A \land B \Rightarrow P \land Q)
\]

2. (6) Using the Fitch-style proof theory presented in lecture, prove that
\[
\vdash (A \Rightarrow B) \Rightarrow (A \lor C \Rightarrow B \lor C)
\]

3. (6) Using the Fitch-style proof theory presented in lecture, prove that
\[
\vdash (A \leftrightarrow B) \Rightarrow (\neg A \leftrightarrow \neg B)
\]