Logic 1, WS 2007. Homework 5, given Nov 22, due Nov 29.

1. Prove using sequent calculus:

$$\forall_x(P[x] \Rightarrow Q) \vdash (\exists_x P[x]) \Rightarrow Q$$

2. Prove using sequent calculus:

$$\exists_x(P[x] \Rightarrow Q) \vdash (\forall_x P[x]) \Rightarrow Q$$

3. Prove using refutation, normal forms, and resolution that

$$\forall_x(\exists_y(S[y] \wedge V[x,y]) \Rightarrow (\exists_z(C[z] \wedge V[x,z])))$$

is a logical consequence of

$$\forall_y(S[y] \Rightarrow C[y]).$$

4. Apply the unification algorithm to: $Q[x,y,z]$ and $Q[u,h[v,v],u]$.