Homework 5

Due Friday, March 30 by 4pm.

1. Exhibit the logical form of the following sentences by translating them into the notation of the predicate calculus (using for predicate-letters and proper names the letters suggested):

    (a) Some college presidents are women. (Px, Wx)
    (b) No women graduated from Princeton before 1973. (Wx, Gx)
    (c) Brutus killed someone. (Kxy, m)
    (d) Women only love rich men. (Wx, Lxy, My, Ry)

2. Translate the following arguments into the symbolism of the predicate calculus, and then show their validity by UE and the propositional calculus rules.

    (a) Milton commits logical fallacies; no student who passed PHI 201 commits logical fallacies; therefore Milton did not pass PHI 201. (m, C, P)
    (b) All male nurses are sympathetic; William is not sympathetic; William is male; therefore William is not a nurse. (M, N, S, n)

3. Using UE and UI together with propositional calculus rules, show the validity of the following sequents. (You may use TI or SI with anything proven in Lemmon's book.)

    (a) $\forall x(Fx \rightarrow Gx) \vdash \forall xFx \rightarrow \forall xGx$
    (b) $\vdash \forall x(Fx \lor \neg Fx)$
    (c) $\forall x\forall yRxy \vdash \forall xRxx$
    (d) $\forall x\neg Fx \vdash \neg \forall xFx$