RYERSON UNIVERSITY
MTH 714 LAB#11
DAY: NOVEMBER 20, 2008

1. Which of the following sets of clauses are satisfiable?

   (a) $\{\neg p(x,y) \vee \neg p(y,x), p(f(x), f(x))\}$

   (b) $\{\neg p(x,y) \vee \neg p(y,x), p(f(f(x)), f(y))\}$

   (c) $\{\neg p(x,y) \vee \neg p(y,z) \vee p(x,z), \neg p(f(x), f(f(f(x)))), p(x, f(x))\}$

2. Exercise 10 from 7.9.

3. Is the formula

   $$\forall x \exists y \forall z [p(f(x), y) \vee p(y, f(z))]$$

   a logical consequence of the set of formulas

   $$\{\forall x \exists y [p(x, f(y)) \rightarrow p(y, f(x))],\ \exists x \forall y \exists z [\neg p(x, f(y)) \rightarrow \neg p(y, f(z))]\}$$