LGIC 010 & PHIL 005
Problem Set 3
Spring Term, 2010

1. (25 points) How many structures with universe of discourse $\{1, 2, 3, 4, 5\}$ interpreting only the monadic predicate letters "F" and "G" make true the schema

$$(\exists x)(Fx \wedge Gx).$$

2. (25 points) Write down a satisfiable schema involving only the monadic predicate letter "F" and "G" which is satisfied by no structure with universe of discourse $\{1, 2\}$.

3. (25 points) How many structures with universe of discourse $\{1, \ldots, 5\}$ interpreting only the monadic predicate letters "F" and "G" make true the schema

$$(\forall x)(Fx \equiv Gx).$$

4. (25 points) How many structures with universe of discourse $\{1, \ldots, 5\}$ interpreting only the monadic predicate letters "F" and "G" make true the schema

$$(\forall x)Fx \vee (\forall x)Gx.$$