

**LGIC 010 & PHIL 005**

**Problem Set 3**

**Spring Term, 2009**

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

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

2. (25 points) Write down a satisfiable schema involving only the monadic predicate letters “ $F$ ” and “ $G$ ” which is satisfied by no structure with universe of discourse  $\{1, 2, 3\}$ .

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

$$(\exists x)\neg(Fx \equiv Gx).$$

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

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