LGIC 010 & PHIL 005
Problem Set 2
Spring Term, 2009

1. (20 points) Let S be the following truth-functional schema:

$$(p_1 \supset q_1) \wedge (p_2 \supset q_2) \wedge (p_3 \supset q_3) \wedge (p_4 \supset q_4) \wedge (p_5 \supset q_5).$$

   How many truth assignments to the ten sentence letters $p_1, \ldots, p_5, q_1, \ldots, q_5$ satisfy the schema S?

2. (20 points) How long a list of truth-functional schemata involving only the sentence letters "p," "q," and "r" can you write down so that no two schemata on your list are equivalent and no schema on your list is implied by "$p \vee q \vee r$"?

3. (30 points) How long a list of truth-functional schemata involving only the sentence letters "p," "q" and "r" can you write down so that each schema on the list is implied by, but does not imply, the schema following it.

4. (30 points) Is there a list of 12,870 schemata involving only the sentence letters "p," "q," "r," and "s" such that no schema on the list implies any other schema on the list? Justify your answer.