1. Consider the following definition of a Ramsey number:

   The *Ramsey number* $r(x_1, \ldots, x_n)$ is the smallest integer $p$ such that if a complete graph $G$ on $p$ vertices is colored with $n$ colors, then for some $i$, $1 \leq i \leq n$, there must exist a complete subgraph of $G$ with $x_i$ vertices, all of whose edges have the same color.

   Thus, $r(3, 3)$ is a number $p$, such that every complete graph on $p$ or more vertices whose edges are colored with 2 colors, must contain a triangle all of whose edges are colored by the same color.

   (a) Write a propositional formula which is satisfiable iff $r(3, 3) > 5$.
   (b) If not already in CNF, convert your formula to CNF.
   (c) Write a CNF formula which is unsatisfiable iff $r(3, 3) \leq 6$.

2. Bonus: Let $\Sigma$ be an effectively enumerable set of wffs. Assume that for each wff $\tau$, either $\Sigma \models \tau$ or $\Sigma \models \neg \tau$ (or both). Show that the set of tautological consequences of $\Sigma$ is decidable.