18.447 Problem Set 3

Problem 1. Prove that every conjunctive normal form Boolean expression which has exactly 10 variables per clause and in which each variable appears in exactly 30 clauses has a satisfying assingment.

Problem 2. Do Problem 3 from Chapter 5. Hint: This is tricky, since as far as I can tell you need to use the non-symmetric version of the Lóvasz Local Lemma. One way to figure out the solution is to first change the problem so that the symmetric version applies by changing an inequality to an equality in the problem statement; then adapt the solution to the original problem.

Problem 3. Do Problem 1 from Chapter 7. Looking at the proof of 7.5.3 may help here.