

Combinatorial Search, final problem set

1. A CNF formula is said to be *fat* if every clause contains at least $1 + \log_2 m$ distinct literals where m is the total number of clauses. Show that any fat CNF formula has a satisfying assignment and describe a randomized algorithm guaranteed to find such a satisfying assignment in expected polynomial time.
2. CLRS, problems 35-1, 35-2, 35-3. In 35-2, ignore the word “fully” and use the definition of a polynomial time approximation scheme from last week’s problem set.
3. Suggest local search based approximation heuristics for MAX INDEPENDENT SET, MAXCUT, MIN PARTITION, GRAPH COLOURING, and MIN SET COVER.