

DM833 – Week 22

Exercises for Wednesday, May 28

1. Write an LP-formulation of the vertex cover problem (unweighted version). Write the dual problem as well. What combinatorial problem does the dual problem correspond to?
2. Exercise 14.3. Only the part about Set MultiCover.
3. Exercise 14.4.
4. Exercise 14.5
5. Exercise 15.5.
Note that what you are asked to do in the first part of the exercise is to find a primal-dual algorithm with an approximation guarantee of $\frac{1}{2}$.
Hint 1: Since this is a maximization problem, the primal and dual problems swap roles compared to what we did for the set cover problem.
Hint 2: When choosing an unsatisfied constraint, choose one with maximum right-hand side.