Αλγοριθμική Επιχειρησιακή Έρευνα
Τέταρτη Εργασία

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1. Consider the problem min 2x1 + 3—x2 – 10— s.t. —x1 + 2—+ —x2— ≤ 5 and reformulate it a linear programming problem.

2. (Road lighting) Consider a road divided in n segments that is illuminated by m lamps. Let pj be the power of the jth lamp. The illumination Ii of the ith segment is assumed to be $\mathcal{P}$m j=1 aijpj where aij are known coefficients. Let I $*$ i be the desired illuminationof road i.

3. Consider a school district with I neighborhoods, J schools and G grades at each school. Each school j has a capacity Cjg for grade g. In each neighborhood i, the student population of grade i is Sig. Finally the distance of school j from neighborhood i is dij . Formulate a linear programming problem whose objective is to assign all students to schools, while minimizing the total distance traveled by all students. (You may ignore the fact that numbers of students must be integer).

4. Consider a set P described by linear inequality constraints P = {x ∈ Rn : a′ix ≤ bi, i = 1, . . . ,m} A ball with center y and radius r is defined as the set of all points within distance r from y. We are interested in finding a ball with the largest possible radius, which is entirely contained within the set P. Provide a linear programming formulation of this problem.