Homework 11*

CS 719, Semester II, 1996-97

Friday April 18, 1997

1. Exercise 16.3 from the class text.

2. Consider

$$\begin{array}{ll} \min & 3x_1 - \frac{2}{3}x_2 \\ \text{subject to} & 0 \leq x_1 \leq 1 \\ & 0 \leq x_2 \leq 1 \\ & x_1 + x_2 = 0.5 \end{array}$$

   (a) Construct the dual problem (just dualizing with respect to the equality constraint).

   (b) Carry out 6 iterations of the subgradient method

$$\lambda^{(k+1)} = \lambda^{(k)} + \frac{1}{k} z^k$$

   where z^k is a subgradient of the dual function g, starting at $\lambda^{(1)} = 0$.

   (c) Carry out 3 steps of the bundle level method, starting at $\lambda^{(1)} = 0$, with $Q = [-5, 5]$ and $\theta = 0.5$. Sketch the resulting model at each iteration.

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*Homework due in class one week after assigned. No late homework accepted.