

# CS 525 - Fall 2009 - Homework 10

assigned 11/24/09 - due Friday 12/4/09

1. Write down  $Q$ ,  $p$ , and  $\alpha$  (with  $Q$  symmetric) to express the following quadratic in the form  $(1/2)x'Qx + p'x + \alpha$ :

$$x_1 - x_2 + 7x_1^2 - 3x_1x_2 + 2x_2^2 - 2x_2x_3 + 4x_1x_3 + 4x_3^2.$$

2. Consider the quadratic program in standard form (formulation (7.7) in the text) with *positive definite* Hessian  $Q$ .
  - (a) Show that it cannot be unbounded below.
  - (b) If the problem is feasible, does it have a global solution? (Give reasons.)
3. Do Exercise 7-2-3.