Issued: Nov. 16, 2017 **IE/MA/OR505 HW 9** **Due: Nov. 30, 2017**

This assignment doubles the weight with Total = 200 pts.

Exercises

(1) (40 points) Consider the following problem:

$$\begin{array}{ll} \text{minimize} & z = 2x_1 + x_2 + 3x_3 \\ \text{subjectto} & x_1 + 2x_2 - x_3 = 1 \\ & x_1 + x_2 + x_3 = 1 \\ & x_1,\ x_2,\ x_3 \geq 0. \end{array}$$

(a) Start from the initial interior point $x_0 = (0.25, 0.5, 0.25)^T$ and use the primal affine scaling algorithm with $\alpha = 0.99$ and $\epsilon = 10^{-1}$ to find an optimal solution.

(b) Start with the initial interior point $s_0 = (2, 1, 3)^T$ and use the dual affine scaling algorithm with $\alpha = 0.99$ and $\epsilon = 10^{-1}$ to find an optimal solution.

(2) (30 points) Textbook Chapter 7, Exercise 7.1.

(3) (50 points) Textbook Chapter 7, Exercise 7.2.

(4) (60 points) Textbook Chapter 7, Exercise 7.3

(5) (20 points) Textbook Chapter 7, Exercise 7.6 (a),(b).