

Math 364 – Homework #4

Due: Tuesday September 19, in class

1. Implement one of the following options:
 - (a) Install [octave](#) on your personal computer
 - (b) Verify that you can use the math department [octave](#) software
 - (c) Create an [octave](#) account with [octave-online.net](#).

Download the following files from the class website: [myexample.m](#), [mip.m](#), [Show-Solution.m](#). Run the file [myexample.m](#) to verify that your setup is complete.

2. Write the following Linear Program in (inequality) standard form. Re-write in (equality) standard form. Provide matrix representations for both.

$$\begin{aligned} \min_{x \in \mathbb{R}^4} \quad & f(x) = 2.5x_1 + 2.4x_2 + 3.1x_3 + \pi x_4 \\ \text{s.t.} \quad & x_1 + x_2 \geq 7.5 \\ & x_1 + x_2 + x_3 + x_4 \geq 18.3 \\ & x_1 - x_2 + 3x_3 + x_4 \geq 9.6 \\ & x_4 \geq 1 \\ & x \geq 0 \end{aligned}$$

3. Solve the same Linear Program using [octave](#). Show that you can do this both using the original form and the standard form.
4. Solve the same Linear Program in [octave](#), with the change that all variables must be integer valued.
5. Compare the solutions from questions 3 and 4. What do you notice?