

**AM 121: Homework # 1 (due Sept 21)**

The book we refer to is Hillier & Lieberman, *Introduction to Operations Research* (8th Edition).

- Read sections 3.1 to 3.5.
- Solve problem 3.1-5, 3.1-12, 3.2-2, 3.4-13(a)
- State the following problem as a linear program:

$$\text{Minimize } Z = |3x_1 + 4x_2 - 7| + 2 \cdot |2x_1 + 3x_2 - 5| + 8 \cdot |-x_1 + 4x_2 - 9|$$

(*Hint:* Explain that the problem is equivalent to

$$\text{Minimize } Z = y_1 + 2y_2 + 8y_3$$

where

$$|3x_1 + 4x_2 - 7| \leq y_1, \quad |2x_1 + 3x_2 - 5| \leq y_2, \quad |-x_1 + 4x_2 - 9| \leq y_3.$$

Formulate the LP from here ...)