

Homework #1

Please write your answers on a separate sheet of paper, and include at least some intermediate steps and English words.

All three exercises concern the following problem from Section 1.1:

The administrator of a \$200,000 trust fund set up by Mr. Smith's will must adhere to certain guidelines. The total amount of \$200,000 need not be fully invested at any one time. The money may be invested in three different types of securities: a utilities stock paying a 9% dividend, an electronics stock paying a 4% dividend, and a bond paying 5% interest. Suppose that the amount invested in the stocks cannot be more than half the total amount invested; the amount invested in the utilities stock cannot exceed \$40,000; and the amount invested in the bond must be at least \$70,000. What investment policy should be pursued to maximize the return?

- 1 Set up a linear programming model of this situation.
- 2 Convert this model to standard form.
- 3 Convert this model to canonical form.

You may want to refer to pages 51 and 52 in your text, where the three forms of linear programming problems (general, standard, and canonical) are defined.