

Homework 1—Due February 14, 2008

1. Do questions 2.1–2.7 from the handout.
2. Consider the following linear programming problem:

$$\begin{aligned} \max_{x_1, x_2} \quad & \alpha x_1 + \beta x_2 \quad \text{subject to} \\ & x_1 + 2x_2 \leq 4, \\ & 2x_1 + x_2 \leq 5, \\ & x_1, x_2 \geq 0, \end{aligned}$$

where α and β are real numbers. Completely classify the optimal solutions x^* of this linear program as well as the value of the problem in terms of the possible range of values that α and β could take.