

## 620-261 Introduction to Operations Research

### ASSIGNMENT 3

*Post in boxes by 3.00 pm on Monday 7th April 2008*

1. In Assignment 2 you were asked to solve the following linear programs using the “graphical” method. The task in this problem is to write each of these linear programs with equality constraints and derive all the basic solutions. For each basic solution,

(i) state whether it is feasible, and

(ii) indicate which point it corresponds to on your graph.

(a)

$$\max 3x_1 + 5x_2$$

such that

$$2x_1 + 3x_2 \leq 12$$

$$3x_1 + 4x_2 \geq 6$$

$$x_1, x_2 \geq 0$$

(b)

$$\max 3x_1 + 2x_2$$

such that

$$4x_1 + 3x_2 \leq 12$$

$$3x_1 + 4x_2 \leq 12$$

$$x_1, x_2 \geq 0$$

(c)

$$\max 3x_1 + 2x_2 + x_3$$

such that

$$3x_1 + x_2 + x_3 = 4$$

$$3x_1 + x_2 \leq 5$$

$$x_1 + 4x_2 \leq 6$$

$$x_1, x_2, x_3 \geq 0$$