

Tufts University
Department of Mathematics
Math 50 Homework 3

Due: Thursday, October 6, at 1:30 p.m. (in class).

1. For the following linear programs, first sketch the feasible region and, then, find the values of x and y where the objective function obtains its maximum value. What is the maximum function value?

(a) (20 points)

$$\begin{aligned} &\text{Maximize } 3x + y \\ &\text{subject to } 2x + y \leq 6 \\ &\quad \quad \quad x + 3y \leq 9 \\ &\quad \quad \quad x, y \geq 0 \end{aligned}$$

(b) (20 points)

$$\begin{aligned} &\text{Maximize } 7x + 3y \\ &\text{subject to } 2x + y \leq 8 \\ &\quad \quad \quad x + y \geq 4 \\ &\quad \quad \quad x, y \geq 0 \end{aligned}$$

(c) (20 points)

$$\begin{aligned} &\text{Maximize } 2x + 3y \\ &\text{subject to } x + y \geq 1 \\ &\quad \quad \quad y - x \leq 3 \\ &\quad \quad \quad 2x + y \leq 9 \\ &\quad \quad \quad x - y \leq 3 \\ &\quad \quad \quad x, y \geq 0 \end{aligned}$$

2. (40 points) Complete the problems assigned in class on Sept. 27.