Homework Day 9 - ECON 186

Problem 1. Chiang and Wainwright 12.3 #1(d)

#1
Use the bordered Hessian to determine whether the stationary value of z obtained in each part of Exercise 12.2-1 is a maximum or a minimum.(See 12.2-1 below)
Use the Lagrange-multiplier method to find the stationary values of z:
(d)$z = 7 - y + x^2$, subject to $x + y = 0$

Problem 2. Chiang and Wainwright 12.5 #1(c)

#1
Given $U = (x + 2)(y + 1)$ and $P_x = 4$, $P_y = 6$, and $B = 130$:
(c)Is the second-order sufficient condition for maximum satisfied?

Problem 3.

Do the optimum levels of x and y in Homework 8 problem 4 maximize the function $f(x, y)$? Show and explain why or why not.

Problem 4.

Suppose that you are trying to find the optimum values of $f(x, y, z) = 4y$ - $2z$ subject to $2x$ - y - $z = 2$ and $x^2 + y^2 = 1$. Find the bordered hessian of this optimization problem.

Problem 5. Chiang and Wainwright 12.6 #1(a, c, f), 6

#1
Determine whether the following functions are homogeneous. If so, of what degree?
(a) $f(x, y) = \sqrt{xy}$ (c)$f(x, y) = x^3 - xy + y^3$ (f)$f(x, y, w) = x^4 - 5yw^3$

Problem 6.

Maximize $C = -(x_1 - 4)^2 - (x_2 - 4)^2$ subject to $x_1 + x_2 \leq 4$ and $x_1 + 3x_2 \leq 9$ and x_1, x_2 ≥ 0. (That is, find the values of x_1 and x_2 that maximize C)