Wilf Csaplar Jr.   Economics 477   Homework #1   Due 9/10

Do not write your name on the assignment. Write your name only on the back of this
sheet of paper and staple your answers on the front of this sheet of paper. Failure to
follow these directions will cost you 1 point on the assignment.

1A) (15 points) Maximize XY subject to $X + 2Y = 12$. Find the values for X, Y, XY, and
λ. Show all work.
1B) (15 points) Draw the diagram that proves it is a maximization and briefly explain
why that makes it a maximization.
1C) (5 points) If the 12 was relaxed to 13, approximately how much will XY increase?
How do you know?

2) (15 points) Minimize $X + 2Y$ subject to $XY = 18$. Find the values for X, Y, X + 2Y,
and λ. Show all work.

3) (15 points) Minimize $X^2 + Y^2$ subject to $4X + Y = 17$. Find the values for X, Y, $X^2 + Y^2$,
and λ. Show all work.

4) (35 points) Minimize $X^2 + 2Y^2 + 3Z^2$ subject to $X + Y = 6$. $X + Z = 4$. Find the values
for X, Y, $X^2 + 2Y^2 + 3Z^2$, λ_1 and λ_2. Show all work.