Econ 4190: Intermediate Microeconomics
Professor Federico Ciliberto

We allow collaboration on homework assignments, and **encourage you to work in study groups of at most 4 students**. You should turn one **assignment** for each study group. We will **not accept late assignments**.

Homework 2 (1 Exercise)
Handed Out on 9/3/2021
Due on 9/9/2021

There is one product, say a soup, and is being offered at one location of a city, which only has one road. The city is represented by the interval [0,1]. Along the line is distributed uniformly a mass 1 of consumers ($M=1$). Then, the density of consumers at each location is 1 (loosely, there is 1 consumer at each location). Each consumer wishes to buy at most one unit.

The firm is located at ½. The firm is called FIRM 1.

The willingness to pay for the good produced at the restaurant FIRM 1 is R_1.

The consumer can also not buy any soup, and the utility in that case would be 0.

The transportation cost for a consumer located at x who travels is $\$Tx$ per unit of distance if traveling from 0 to x. The transportation cost for a consumer located at x who travels is $\$T(1-x)$ per unit of distance if traveling from x to 1.

The production costs for FIRM 1 are zero (so $c_1=0$).

a) (5 points). What price should FIRM 1 charge to maximize its profit? What would the profit be equal to?

b) (5 points). How would your answer change if the firm is located at ¼?

c) (5 points). How would your answer change if the firm is located at 1?

Be careful in discussing how your answers to questions 5.a; 5.b; 5c depend on the parameters R_1 and T.

d) (5 points) Where would the firm be rather located? What is the basic economic intuition?