**IENG438**

**TUTORIAL 1**

**1.** The demand function is D(p)=1-p. The supply function is S(p)=0.3+0.2p.

 (a) How much is the equilibrium price?

 (b) How much is the welfare of the customers?

(c) How much is the welfare of the suppliers?

(d) How much is the monopole price if the variable unit cost is c=0.3?

**2.** The demand function is D(p)=1-p. The supply function is S(p)=c+ap, where a, c > 0.

 (a) How much is the equilibrium price?

 (b) How much is the monopole price?

(c) What kind of conditions must be satisfied by a and c if the monopole price is greater than the equilibrium price?

(d) Give a case when the equilibrium price is higher than the monopole price.

**3.** The travel cost in a linear city is 12 batka. The prices of the shops on the two ends of the city are p1=48, p2=54. Where is the indifferent point?

**4.** Solve Problem 3 with p1=45 and p2=57. What is your conclusion?

**5.** What conditions must be satisfied by the prices in a linear city problem such that one shop will supply the whole city?

**6.** SEARS invests $12m in a shop. They plan an opening time of 15 hours in a day. They expect a low revenue in the first and last 30 minutes. Otherwise they plan to open 20 cashiers. SEARS will give 8 percent discount in this shop. They think that an average customer will save $20 per purchase. Their profit margin 28 percent. The average service time at the cashier is supposed to be 10 minutes. How long is the time period after opening the shop that SEARS get back the $12m?