1) (10 Points) A racing bike manufacturer company called BMX in Turkey is using a special pillion seat in its brand new bike model. The bike sales for this model show a fairly steady demand of 5600 bikes per year. BMX purchases these seats from a producer in Germany at a price of $8/unit. It costs BMX $100 to place an order. Inventory holding costs are based on an annual interest rate of 20%. Suppose that the seat supplier is offering a quantity discount applied to all units with the following schedule:

8Q for Q ≤ 800

7Q for 800 < Q ≤ 1000

6Q for 1000 < Q

a) What is the optimal order quantity in this case?

b) What is the average total cost including purchasing cost?

2) (10 Points) For the bike company in the previous question, assume now the supplier is offering an incremental discount with the following schedule:

8Q for Q ≤ 1000

8000 + 7.9(Q - 1000) for 1000 < Q ≤ 2000

15900 + 7.8(Q - 2000) for 2000 < Q

a) What is the optimal order quantity in this case?

b) What is the average total cost including purchasing cost?