

MICROECONOMIC PROBLEMS

CLASS #4

Problem 1

Draw a figure presenting the situation of an enterprise functioning under pure competition conditions in the short run. Graph the following curves: the marginal cost (MC), the average total cost (ATC) and the average variable cost (AVC). The market equilibrium price is above ATC minimum. Demonstrate:

- The total cost of production when profits are on a maximum level;
- The total profits on an optimal level;
- The price level, when the firm decides to go out of business (shut down production);
- The total revenue for the minimum profitable level of output;
- The equilibrium price in the long run (constant technology)

Problem 2

A firm operating in perfect competition has the following short-run cost function: $TC(q) = 3q^3 - 6q^2 + 28q + 72$. At what price will the firm shut down its production? Derive the supply function for this firm.

Problem 3

A company produces Q using solely L as input, according to a following production function: $Q = 2L^{1/2}$. The price of a product is P , while inputs costs w . What is the supply function of this company?

Problem 4

The supply function in a perfectly competitive market is given by the formula: $Q(p) = 100p$. Derive the total cost function of a representative firm operating in this market, if there are 200 of such firms in the market and fixed costs are 30 for each of them.

Problem 5

There are 100 identical firms operating in a competitive market. Each of them has the short-run cost function: $C(q) = STC = (1/300)q^3 + 0.2q^2 + 4q + 10$.

- Derive the short-run supply curve for each enterprise.
- Present the short-run supply curve formula for the entire industry.
- Find the equilibrium price and output for this market, assuming that market demand is given by the following function: $Q(p) = -200p + 8000$.

Problem 6

In a competitive industry all firms have identical long-run cost functions $LTC(q) = q^2 + 16$. In the long run the demand function for products of this industry is $D(p) = 2000 - p$. How many firms will be operating in this industry in the long-run equilibrium?