

SECTION NOTES 13

Covering material from Lecture on February 23rd

CLASS OUTLINE

1. Perfect Competition
2. Profit, Marginal Revenue and Marginal Cost
3. Profit Maximization

1 Perfect Competition

Perfect competition is an economic environment where we take on certain assumptions.

Table 1: ASSUMPTIONS OF PERFECT COMPETITION

<u>Assumptions</u>	<u>What They Imply</u>
1. Price Taking Firms	⇒
2. Product Homogeneity	⇒
3. Free entry/exit	⇒

2 Profit, Marginal Revenue and Marginal Cost

Profits are defined by:

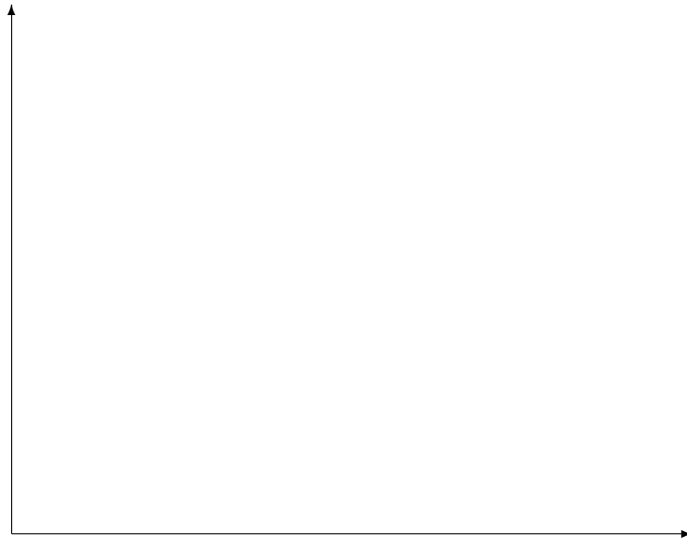
$$\pi(q) = R(q) - C(q)$$

Notice here that $C(q)$ is the same as the $TC(q)$ we saw previously. So profits are a function of two functions that we can think about separately: Revenue and Costs.

$R(q) = P(q) \cdot q$, but in perfect competition, firms are price takers. What does this mean about Marginal Revenue?

$C(q) = F + c(q)$. This means Marginal Costs are determined by...

Figure 1: REVENUE, COSTS, AND PROFITS



3 Profit Maximization

In general firms want to maximize profits. The typical problem is:

$$\max_q R(q) - C(q)$$

We can think about this also as:

$$\max_q P(q) \cdot q - C(q)$$

But remember, what does the assumption of price taking mean for $P(q)$?

Problem: (P&R, Chapter 8, Exercise 4)

Suppose you are the manager of a watchmaking firm operating in a competitive market. Your cost of production is given by $C = 200 + 2q^2$, where q is the level of output and C is total cost.

- a. If the price of watches is \$100, how many watches should you produce to maximize profit?
- b. What will the profit level be?
- c. At what minimum price will the firm produce a positive output?

Problem: (P&R, Chapter 8, Exercise 9)

- a. Suppose that a firm's production function is $q = 9x^{1/2}$ in the short run, where there are fixed costs of \$1000, and x is the variable input whose cost is \$4000 per unit. What is the total cost of producing a level of output q ?
- b. Write down the equation for the supply curve.
- c. If price is \$1000, how many units will the firm produce? What is the level of profit?

Problem: (P&R, Chapter 8, Exercise 8)

Suppose a firm has the following short-run cost function $C(q) = q^3 - 8q^2 + 30q + 5$.

- a. Find MC, AC, and AVC and sketch them on a graph.
- b. At what range of prices will the firm supply zero output?
- c. Identify the firm's supply curve on your graph.
- d. At what price would the firm supply exactly 6 units of output?