

## SECTION NOTES 20

Covering material from Lecture on March 23<sup>rd</sup>

### CLASS OUTLINE

1. Advertising
2. Factor Markets

Finish Problems from last section notes.

### 1 Advertising

As was discussed in lecture, when a firm starts to lose its monopoly advantage, one of the ways it continues to extract rents is by catering to consumer loyalty, or perceptions of quality. This is done through advertising. We can then literally think about advertising as something a firm chooses over, and therefore optimizes over.

**Problem:** (P&R, Chapter 11, Exercise 17)

Consider a firm with monopoly power that faces the demand curve

$$P = 100 - 3Q + 4A^{1/2}$$

and has the total cost function

$$C = 4Q^2 + 10Q + A$$

where  $A$  is the level of advertising expenditures, and  $P$  and  $Q$  are price and output.

- a. Find the values of  $A$ ,  $Q$ , and  $P$  that maximize the firm's profit.
- b. Calculate the Lerner index,  $L = (P - MC)/P$ , at this firm's profit-maximizing levels of  $A$ ,  $Q$ , and  $P$ .

## 2 Factor Markets

So far we've been making profit maximizing choices from a given cost function where we choose a quantity to produce. However, from previous chapters we've seen that these cost functions really come from our choice of inputs. Therefore, we can equivalently think about maximizing profits, or making optimal production decisions over inputs.

**Problem:** (P&R, Chapter 11, Exercise 6)

Suppose that a firm's production function is given by  $Q = 12L - L^2$ , where  $L$  is labor input per day and  $Q$  is output per day. Derive and draw the firm's demand for labor curve if the firm's output sells for \$10 in a competitive market. How many workers will the firm hire when the wage rate is \$30 per day? \$60 per day?