

HW2 ANSWER KEY**PART I****1. Price Discrimination**

- When pricing automobiles, American car companies typically charge a much higher percentage mark-up over cost for "luxury operation" items such as leather trim, etc., than for the car itself or for more "basic" options such as power steering and automatic transmission. Explain why.

This is an example of third degree price discrimination, where we assume that the cost of production car options is a function of the total number of options produced and the production of each type of options affects costs in the same way. The higher price is charged for the package with the lower elasticity of demand. Thus, this pricing can be explained if the "luxury" options are purchased by consumers with low elasticities of demand relative to consumers of more "basic" packages. You could also say that it is second degree price discrimination if you carefully base your argument around the fact that customers self select.

- Sal's satellite company broadcasts TV to subscribers in Los Angeles and New York. The demand and marginal revenue are below. The TC of providing Q units of service is given by $TC = 1000 + 30Q$. What are the profit maximizing prices and quantities for the New York and Los Angeles markets? What would happen if people in LA were able to receive Sal's NY broadcasts and vice versa due to a new improved satellite?

$$P_{NY} = 150 - 3Q_{NY} \quad P_{LA} = 120 - 3/2Q_{LA}$$

New York: $150 - 6Q_{ny} = -30$; $Q_{ny} = 20$, $P_{ny} = \$90$
 Los Angeles: $120 - 3Q_{la} = 30$; $Q_{la} = 30$, $P_{la} = \$75$

If people in LA could receive the broadcasts, and vice versa, then there would be no basis for price discrimination as the two markets could no longer be separated and the total profits would decrease.

ABOVE IS SUFFICIENT FOR FULL CREDIT. Extra credit (1 points) if following analysis is also presented to reason the profit decrease:

$$\begin{aligned} \text{Profits under price discrimination} &= 30*75 + 20*90 - 50*30 = 2550 \text{ (without fixed cost)} \\ &= 30*75 + 20*90 - (1000 + 50*30) = 1550 \text{ (with fixed cost)} \end{aligned}$$

Profits under single price: for that you need to figure out the market demand: invert the original demands and add Qs:

$$Q_{NY} = 50 - 1/3 P_{NY}$$

$$Q_{LA} = 80 - 2/3 P_{LA}$$

$$\text{Total demand} = Q_{NY} + Q_{LA} = 130 - P = Q_M$$

$$\text{Invert again: } P = 130 - Q_M \text{ then Marginal Revenue: } MR = 130 - 2Q_M = MC = 30$$

Which gives us $Q_M = 50$, $P = 80$

$$\begin{aligned} \text{Profits} &= 50*80 - 30*50 = 50*50 = 2500 \text{ (without fixed cost)} \\ &= 50*80 - (1000 + 30*50) = 1500 \text{ (with fixed cost)} \end{aligned}$$

- Many retail video stores offer two alternative plans for renting films:

- Two-Part Tariff: pay an annual membership fee (e.g. \$40) and then pay a small fee per film rented (e.g. \$2 per film per day)
- Straight rental fee: pay no membership fee but pay a higher daily rental fee (e.g. \$4 per film).

Why do you think the store might offer the two-part tariff? Why offer customers a choice rather than merely offering the two-part tariff? Give examples of other businesses/industries that adopt similar pricing strategies.

By using this strategy, the firm allows customers to sort themselves into two groups: high-volume who rent many films per year and low-volume who rent only a few films per year (less than 20). If only the two-part tariff is used, the firm has the problem of determining the profit-maximizing entry and rental fees with many different consumers. I.e. a high entry fee discourages low-volume consumers; a low entry fee with a high rental fee encourages membership but discourages high-volume consumers from joining. Instead of forcing customers to pay both an entry and rental fee, the firm effectively charges two different prices to two different types of consumers.