

Nonlinear pricing example 2: Two Part Tariff

Econ 201/Haworth

Assume that a monopoly faces the following demand, marginal revenue and cost curves:

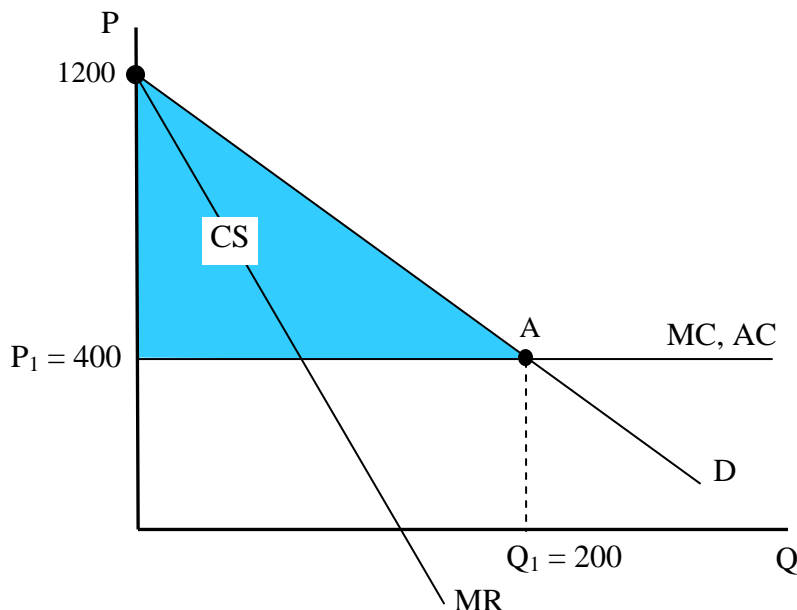
(Demand)	$P = 1200 - 4Q$	(where $P =$ price, $Q =$ quantity)
(Marginal Revenue)	$MR = 1200 - 8Q$	
(Marginal Cost)	$MC = 400$	
(Average Cost)	$AC = 400$	

Assume further that this firm sells a good that a lot of people are interested in purchasing, and that this consumer base is homogeneous (i.e. all the same). If it helps, assume that there are 100 people in this consumer base who are willing to pay at least MC (i.e. \$400).

Let's say that our monopolist decides to implement a two part tariff, which will involve charging a membership fee (assume there is no cost associated with the firm designating membership – e.g. assume there's no membership card, but that no one ever tries to sneak in and get the member price or buy units for non-member friends).

Prior to setting the fixed fee, our monopoly decides on a price for their good. That price is set equal to \$400 (i.e. $P_1 = 400$). Using the demand curve, we can determine that the firm will sell 200 units at that price (i.e. $Q_1 = 200$).

All of this is illustrated on the graph below, in addition to the consumer surplus that this firm would create by setting a price like P_1 . Let's assume that after some thought and a few calculations, our monopolist realizes that she is able to earn the entire area of consumer surplus as (overall fixed fee revenue).



Question: what would be the overall profit earned from implementing this pricing strategy?

Answer:

Note that there are 2 things which contribute to overall profit. There is the profit earned from selling this good, but also the fixed fee revenue earned from selling memberships which allow consumers to buy the good.

Fixed Fee Revenue: this comes from the area of consumer surplus. Unless we have additional information, there's no way of knowing whether the monopoly can get all of this consumer surplus, some of it or none of it. Note that we assumed on the previous page that this monopoly can appropriate the entire consumer surplus as fixed fee revenue. That being the case, we simply need to calculate the area of consumer surplus (the triangle on the graph).

Consumer surplus = $\frac{1}{2} \times$ (base \times height) of the triangular area on the graph

The base is Q_1 , which we've already determined to be 200 units.

The height is the difference between the vertical intercept and P_1 , which is $1200 - 400$, or \$800.

Consumer surplus = $\frac{1}{2} \times (200 \times \$800)$

Consumer surplus = \$80,000

Fixed Fee Revenue = \$80,000

The profit from selling units is calculated the same way we've always calculated profit (below).

Profit = $(P_1 - AC)(Q_1)$

Profit = $(400 - 400)(200)$

Profit = 0

Overall π = Fixed Fee Revenue + Profit

Overall π = \$80,000