

## Price Discrimination Handout 2

Consider linear inverse and regular demand curves given by

$$p = 20 - 2Q$$

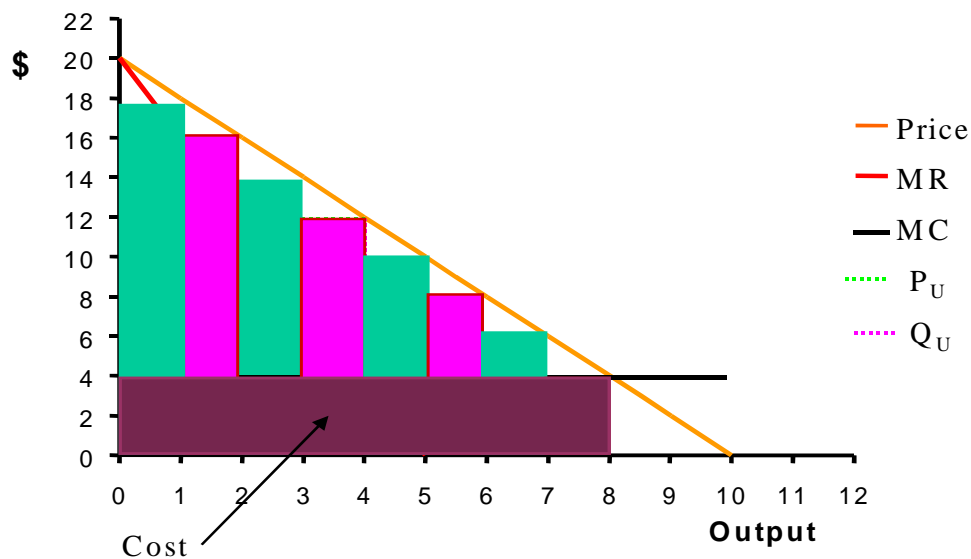
$$Q = 10 - \frac{1}{2}p$$

where it is assumed that the one and only one unit can be sold for \$18. A second unit can be sold for \$16. Assume that marginal cost is constant and equal to \$4.00. The following table shows quantity, price, total revenue, marginal revenue, cost, marginal cost and profit with uniform pricing and the same revenue amounts with approximate first degree price discrimination. The column labeled MR is exact marginal revenue with uniform pricing.

Q	Price	TR Uniform	MR Uniform	Cost	MC Exact	Profit Uniform	MR	TR Discrim	MR Discrim	Profit Discrim
0.00	20.00	0.00		0.00	4.00	0.00	20.00			0.00
1.00	18.00	18.00	18.00	4.00	4.00	14.00	16.00	18.00	18.00	14.00
2.00	16.00	32.00	14.00	8.00	4.00	24.00	12.00	34.00	16.00	26.00
3.00	14.00	42.00	10.00	12.00	4.00	30.00	8.00	48.00	14.00	36.00
4.00	12.00	48.00	6.00	16.00	4.00	32.00	4.00	60.00	12.00	44.00
5.00	10.00	50.00	2.00	20.00	4.00	30.00	0.00	70.00	10.00	50.00
6.00	8.00	48.00	-2.00	24.00	4.00	24.00	-4.00	78.00	8.00	54.00
7.00	6.00	42.00	-6.00	28.00	4.00	14.00	-8.00	84.00	6.00	56.00
8.00	4.00	32.00	-10.00	32.00	4.00	0.00	-12.00	88.00	4.00	56.00
9.00	2.00	18.00	-14.00	36.00	4.00	-18.00	-16.00	90.00	2.00	54.00
10.00	0.00	0.00	-18.00	40.00	4.00	-40.00	-20.00	90.00	0.00	50.00

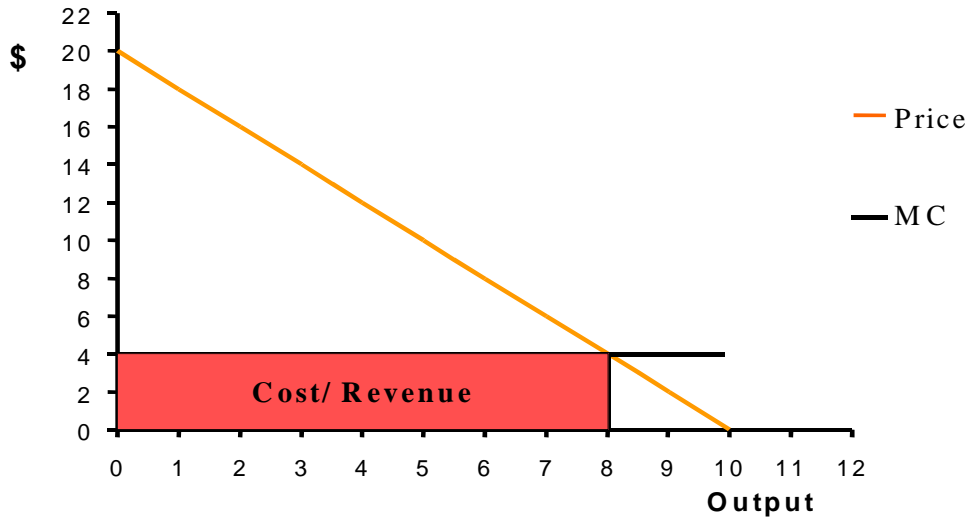
The optimum for a price discriminating monopolist is as follows

### Profit Max for Discriminating Monopolist



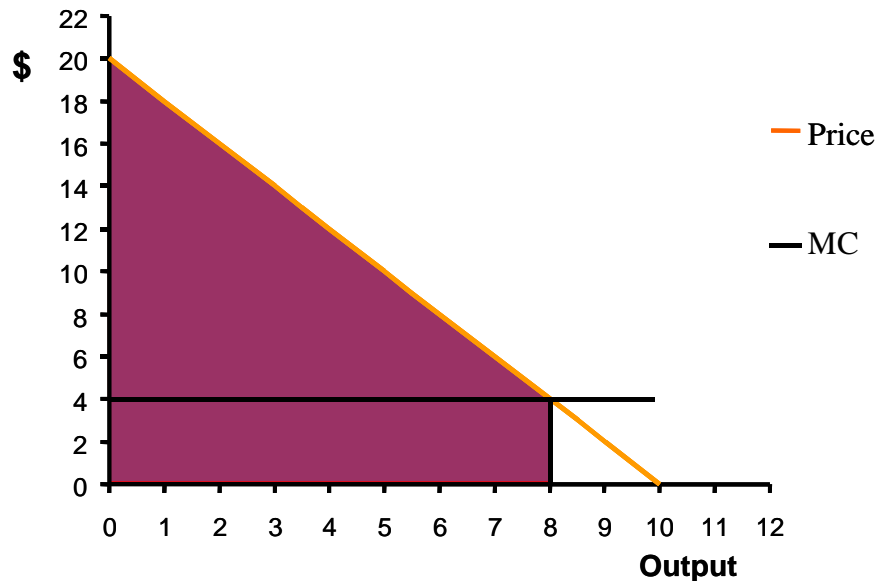
If the monopolist can perfectly price discriminate, then the monopolist will produce where price is equal to marginal cost and produce the same amount as a competitive industry with the same cost structure. The consumers will not be indifferent, ever. The consumers in the above problem pay \$88.00 for 8 units while with competition they would pay only \$32.00 for the same 8 units. This is clear from the following diagram.

### Competitive Equilibrium



If the monopolist could charge for and sell partial amounts of a product the maximum amount the firm could charge for  $q_1$  units would be the area under the demand curve from 0 up until  $q_1$  units. We can see this is the figure below where  $q_1$  is equal to 8.

### Profit Max for Discriminating Monopolist



For this problem this area is given by \$96 which is slightly larger than the \$88.00 we obtained by considering only whole units. In such a case consumers pay \$96 as compared to \$88 for the eight units. The monopolist has profits of \$64.00. This is the most profit possible.