AE 503

MONOPOLY

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■ **<u>Monopoly Equilibrium - Linear Demand Case</u>**

Suppose demand is:

$$p = a - by \qquad (1)$$

where a is the demand curve intercept, and b is its slope

■ **Revenue r is then:**
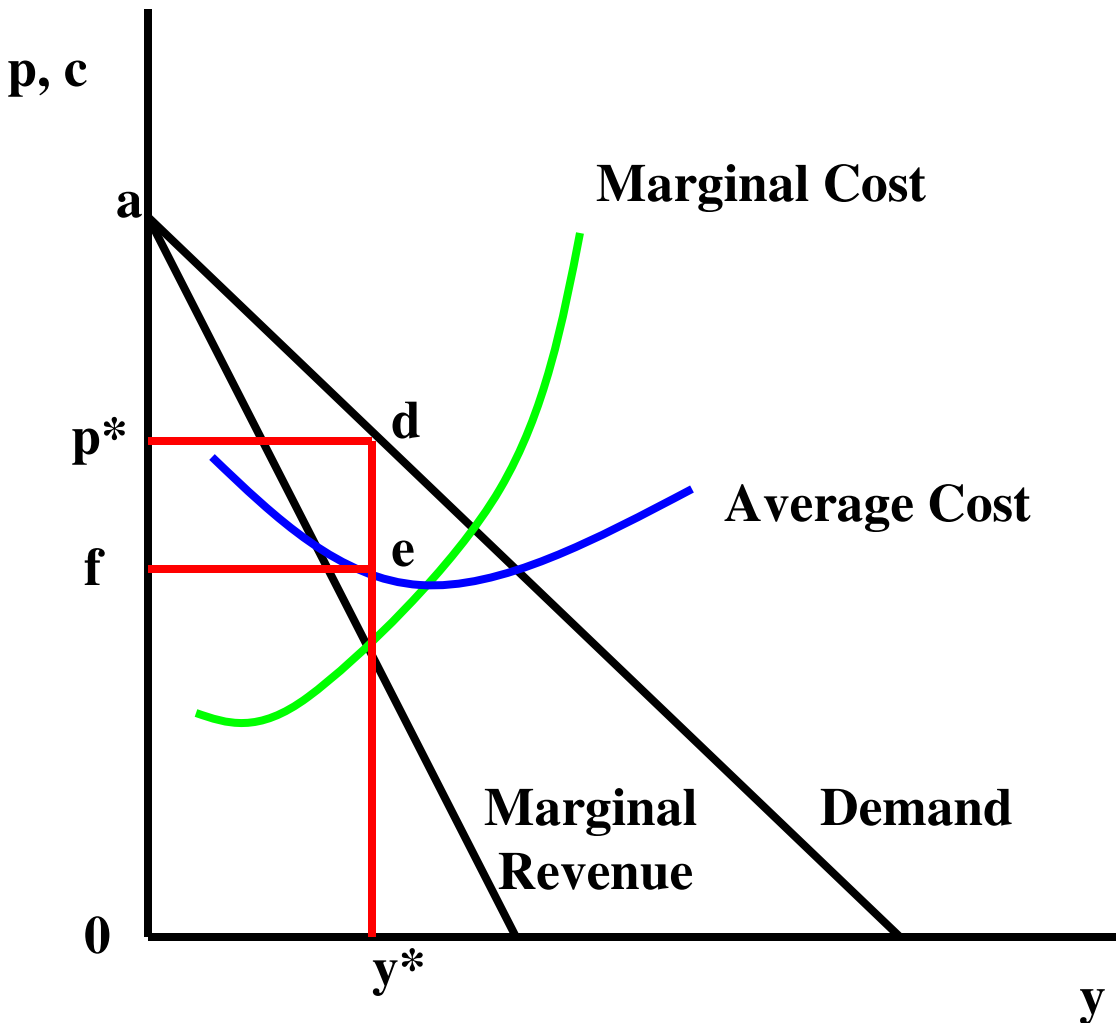
$$r = py = ay - by^2 \qquad (2)$$

■ **Differentiating this with respect to y gives marginal revenue:**

$$MR = a - 2by \qquad (3)$$

i.e. the marginal revenue curve has the same intercept as the demand curve, but has a slope that is twice as steep, 2b

(See next figure)

MONOPOLY EQUILIBRIUM

Monopoly equilibrium is at output y*, where marginal revenue = marginal cost

Total revenue, p*y* = area (0 p*dy*)

Total cost, cy* = area (0fey*)

Monopoly profit = area (p*fed)

■ **Why is Monopoly Inefficient?**

Compared to competition, monopoly results in lower output, and a higher price. Consumers are worse off than under competition, but the firm is better off. So what are the efficiency arguments against monopoly?
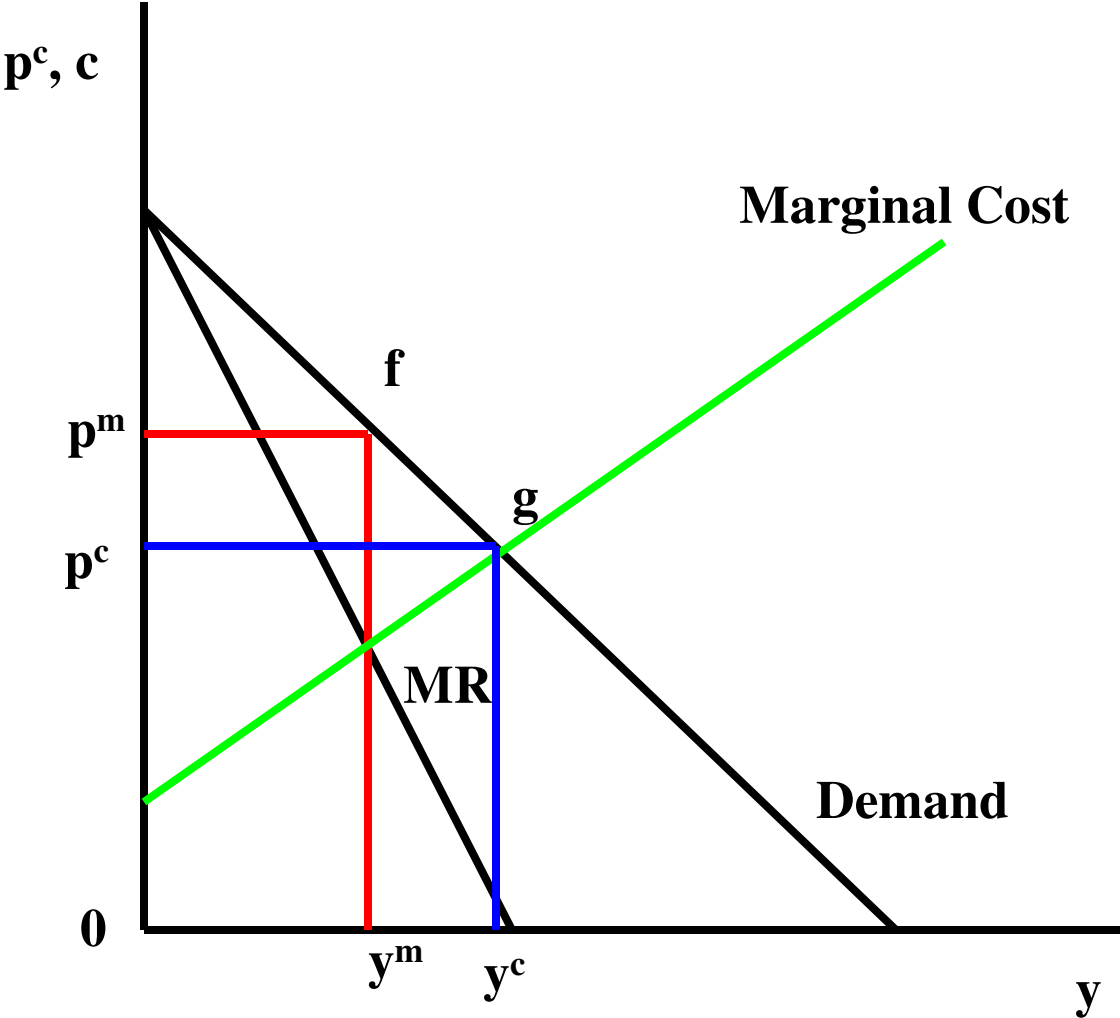
■ **Looking at next figure:**

- the competitive firm would set output at y^c, with a price of p^c, where price is equal to marginal cost

- monopolist goes to y^m, with a price of p^m

■ **Is the monopoly equilibrium one where somebody can be made better off, without making anyone worse off?**

MONOPOLY EQUILIBRIUM

■ **Along demand curve, price measures how much consumers are willing to pay for an extra unit of the good**

■ **Between f and g, there is a range of output where some consumers are willing to pay more than the cost of producing it, i.e. there is room for a Pareto improvement**

■ **Why does inefficiency occur?**

☞ **monopolist takes account of the effect of an increase in output on the revenue it receives from those units it is *already* selling, i.e. *infra-marginal* units**

☞ **if output is increased by one unit, price of current units sold falls, lowering monopolist's profits**

☞ **if price of current units sold did not have to fall, monopolist would produce up to the efficient point, where the last unit sold has a price equal to marginal cost**

☞ **monopolist would set a specific price for each unit of good sold - *perfect price discrimination***

■ **How is the inefficiency of monopoly measured?**

☞ **consumer loss measured by** *consumer surplus*

☞ **firm's gain measured by** *producer surplus*

Difference between these gives a measure of net benefit/cost of monopoly (See next figure)

■ **If price is lowered from monopoly level p^m:**

**- producer surplus falls by** *area A*, **a lower price being received on current units sold**

- producer suplus goes up by *area D*, **which is surplus earned on extra units sold**

- monopolist continues to earn *area B*

- consumer surplus increases by *area A*, **as they get y^m at the lower price p^c**

- consumer surplus increases by *area C*, **extra units being consumed**

LOSS FROM MONOPOLY

p^c, c

p^m

p^c

A

C

B

D

Marginal Cost

Demand

MR

0

y^m

y^c

y
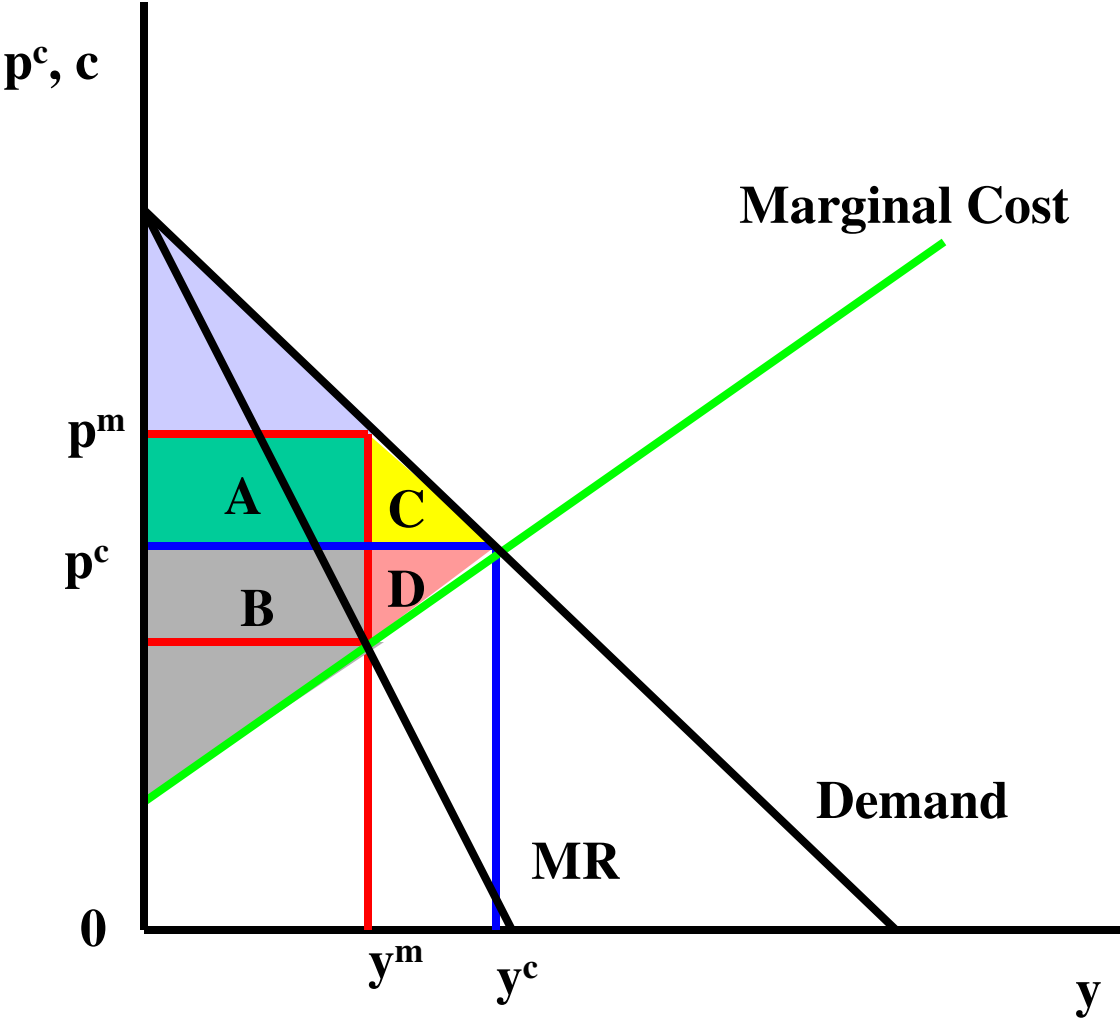
- *Area A* is a transfer from monopolist to consumer, so consumer is better off, firm worse off, but total surplus of (A+B) has not changed

- *Area (C+D)* is an increase in surplus, i.e. the value that consumers and the firm place on the extra output

- *Area (C+D)* is known as the *deadweight loss* from monopoly, providing a measure of how much worse off people are by paying the monopoly price

- It measures the value of lost output, by valuing each unit of lost output at the price people are willing to pay for that unit