Topic 9

Monopoly

Things to Consider

- Why can't I get Shaw cable TV where I live? Why does it have to be Cogeco?
- Why are tickets to Leafs games so expensive?
- Why don't other vacuum cleaners use that ball like Dyson has? And why do Dyson vacuums cost so much more?

Monopoly and Market Power

A monopoly:

- one seller of a product.
- its product does not have close substitutes.
- the firm is a **price setter**.

Why Monopolies Arise

- The basic reason for monopoly is barriers to entry. There are four sources of these barriers.

1. A single firm owns a key resource that no other firm can access or has a close substitute for.

   In reality, this is rare because firms are big and international in scope.

2. The government gives one firm the exclusive right to produce and sell some good.

- Patents or copyrights are an example (Dyson)

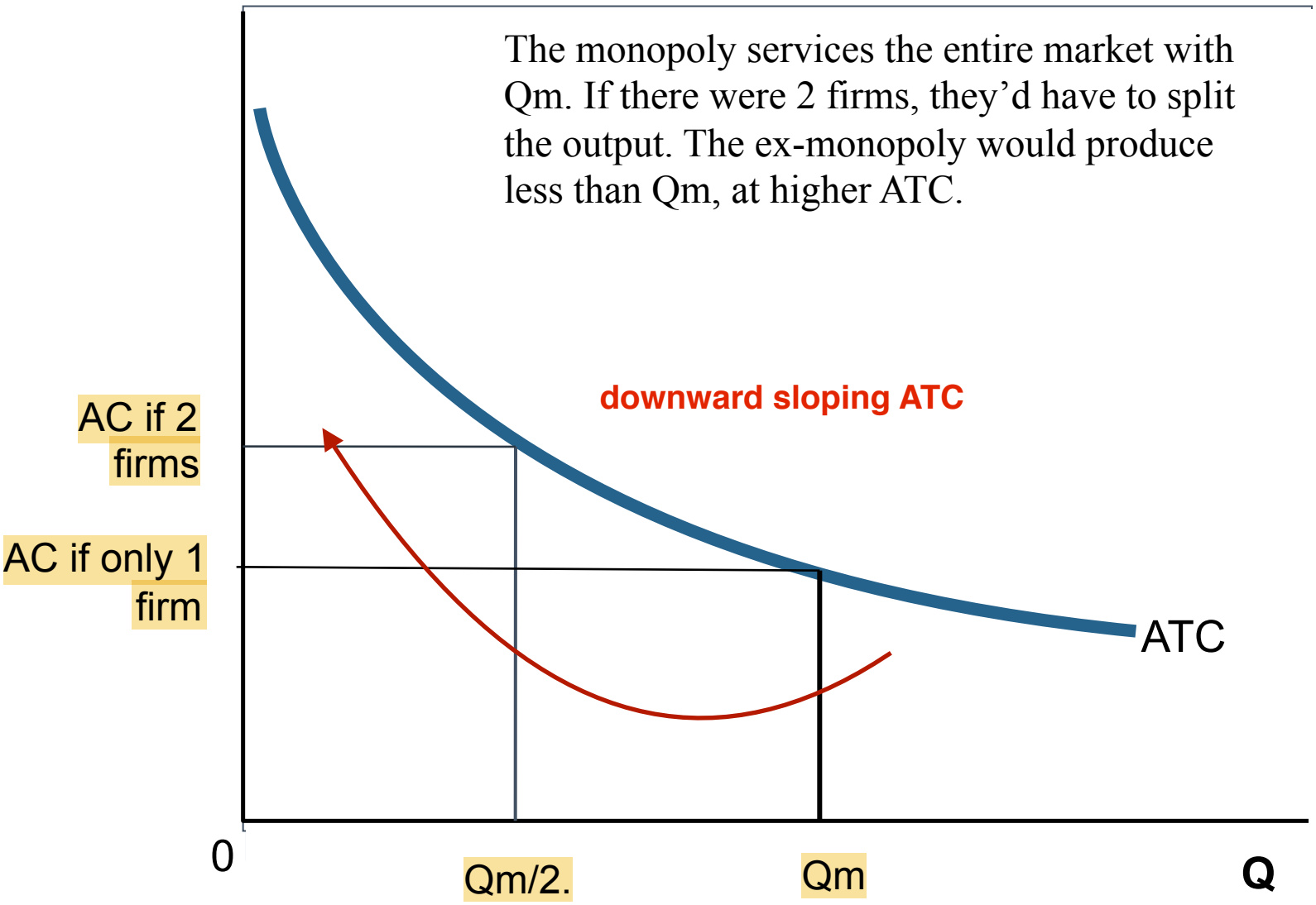
- can simply give a firm the sole right to sell in a particular market (ex cable tv companies)

3. An industry is a natural monopoly:

- A single firm can supply a good or service to an entire market at a lower cost than could two or more firms.
- A natural monopoly arises when:

arrises when there are increasing returns to scale (IRS) over a relevant range of output,

- firm operates on the downward sloping part of average cost curve


The monopoly services the entire market with Qm. If there were 2 firms, they'd have to split the output. The ex-monopoly would produce less than Qm, at higher ATC.
downward sloping ATC
AC if 2 firms
AC if only 1 firm
ATC
0
Qm/2.
Qm
Q

4. Monopoly by good management.

- some firms conduct their affairs with the aim of either keeping out or perhaps driving out competition

Test Yourself

- Which of the following industries might be better served by a monopoly as opposed to numerous firms?
- A) electricity generation
- B) satellite television
- C) greenhouse agriculture
- D) self-serve gas stations

Monopoly P and Q Decisions

- Recall that a perfectly competitive firm is a price taker and faces a horizontal D curve.

- A monopoly is the only seller and has to service the entire market.
- Its demand curve is the market demand curve.
- So, the monopoly faces a downward sloping demand curve.

- Because the monopolist's demand curve is downward sloping, if the firm wants to increase the Q sold, it has to lower its P not just on the additional output but on all units of output.
  - It can sell more Q but only at a lower price for all goods.
  - The change in total revenue from selling one more good is the price of that good minus the amount that price had to be reduced on all earlier goods.
- In other words:

MR is always lower than P

- The profit-maximizing monopolist will always choose to produce a level of output Q such that

MR = MC < P

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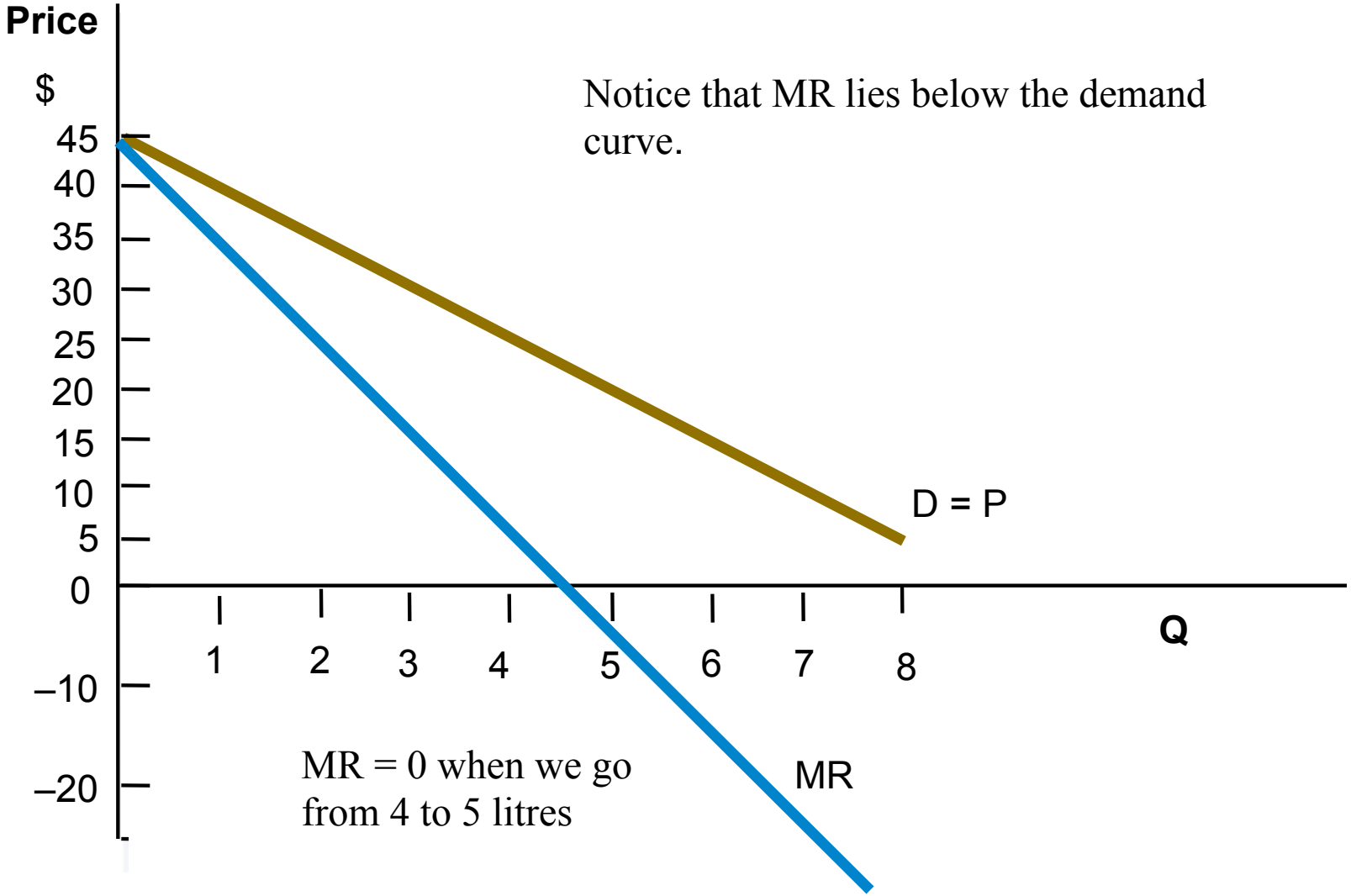
$$\mathbf{MR = MC < P}$$

- Example:
- GB Wine Company is the only producer of white wine in a small town (it owns the only vineyard).
- GB faces the following demand schedule where wine is measured in 750ml bottles:

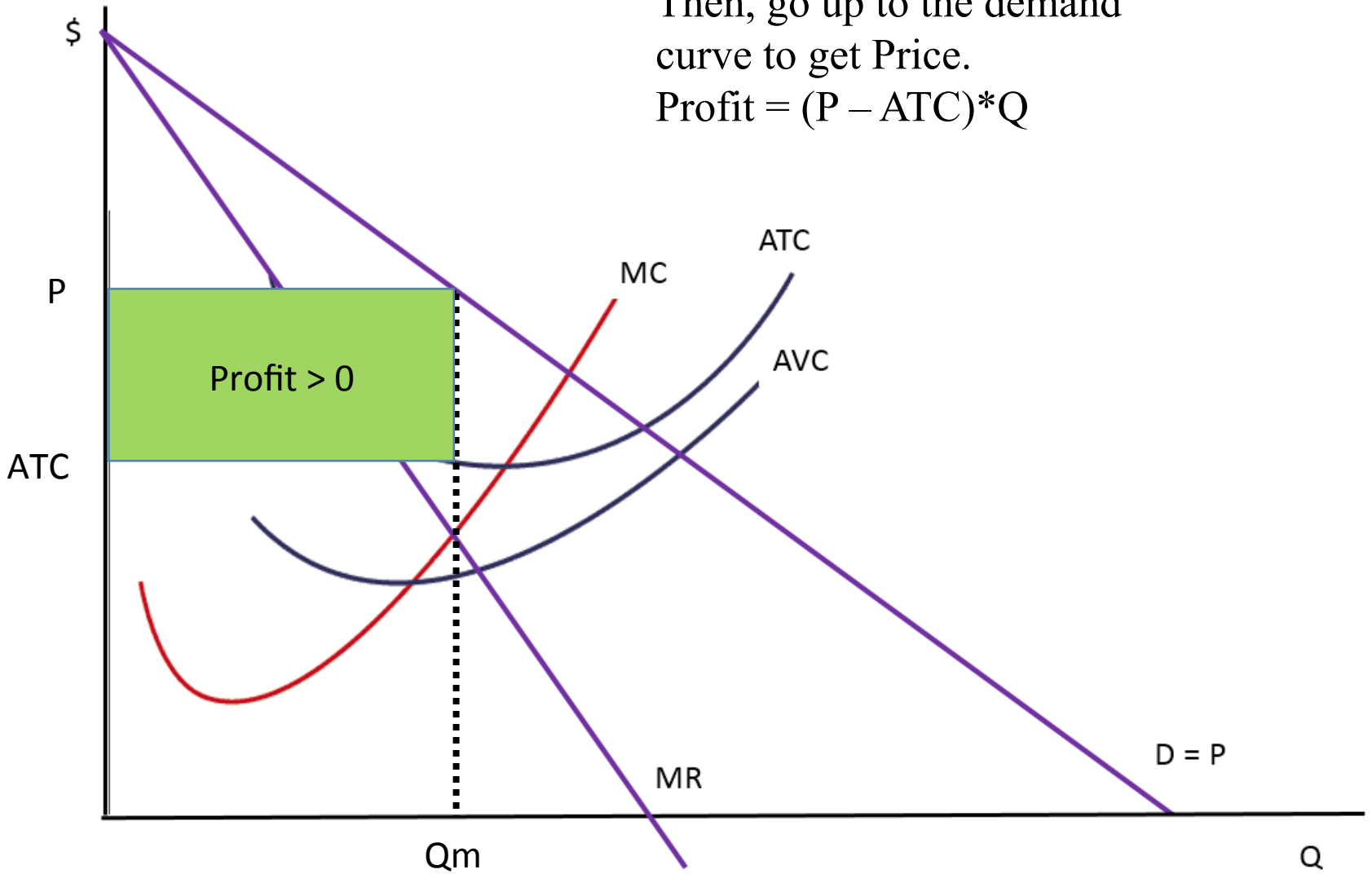
GB's Demand and Revenues

Q	P	TR = PQ	AR = TR/Q	MR = ΔTR/ΔQ
1	40	40	40	
2	35	70	35	30
3	30	90	30	20
4	25	100	25	10
5	20	100	20	0
6	15	90	15	-10
7	10	70	10	-20
8	5	40	5	-30


Price
$
45
40
35
30
25
20
15
10
5
0
–10
–20
1
2
3
4
5
6
7
8
Q
Notice that MR lies below the demand curve.
D = P
MR = 0 when we go from 4 to 5 litres
MR

- A monopoly maximizes profit by producing Q where MR = MC.
- It then uses the demand curve to find the price that will induce consumers to buy that quantity.
- Monopoly profit is derived the same way as perfect competition profit (or any firm's profit)
- $\Pi = TR - TC$ so
- $\Pi = (P - ATC)*Q$

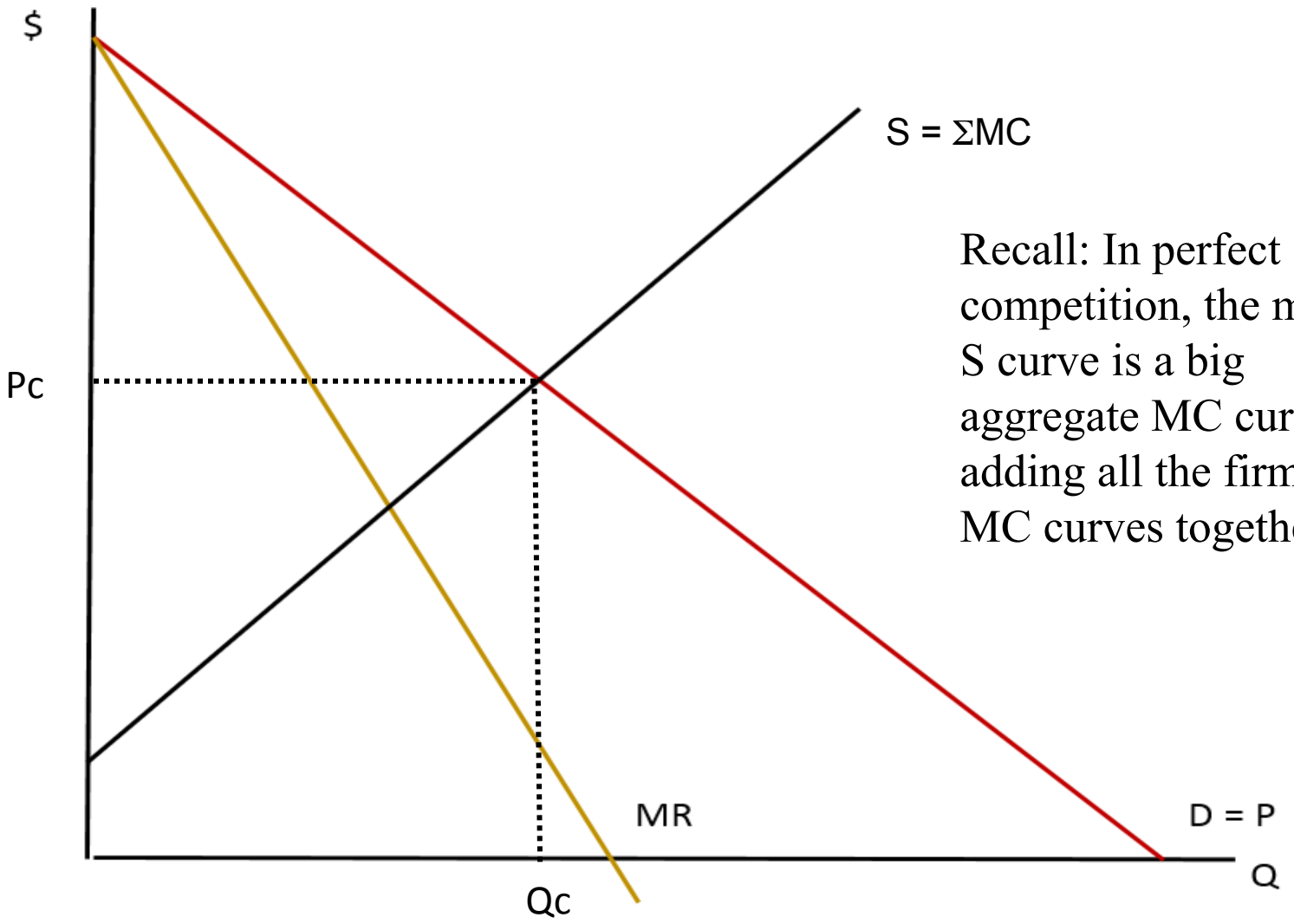
Set MR = MC and choose Q.
Then, go up to the demand curve to get Price.
Profit = (P – ATC)*Q



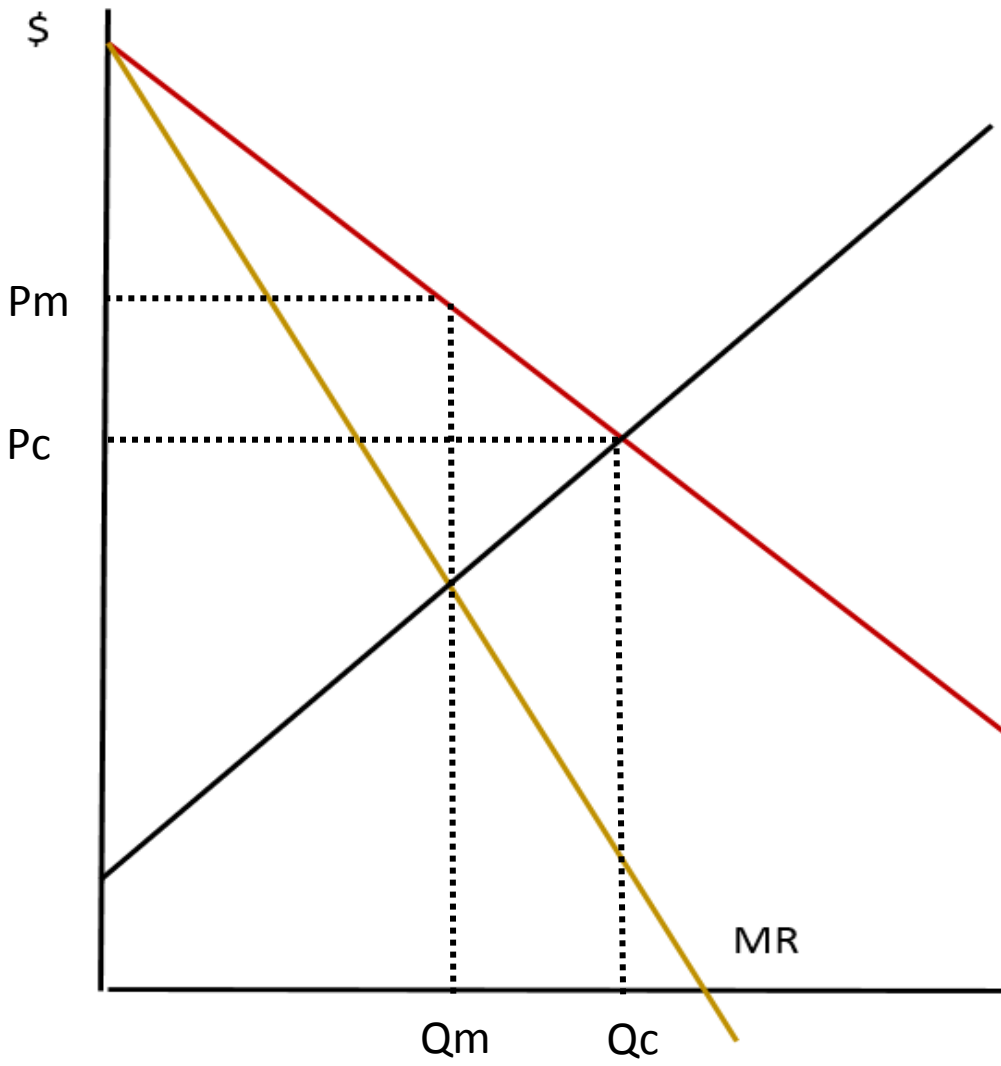
The Inefficiency of Monopoly

- Recall: a competitive equilibrium maximizes CS and PS and society's welfare is maximized.
  - It sells where P = MC.
  - The competitive outcome is the socially efficient level, Q.
- The monopolist produces less than the socially efficient quantity of output and charges a higher price for it.
  - It sells where P > MC.
  - This means there will be a deadweight loss in total surplus in the market.

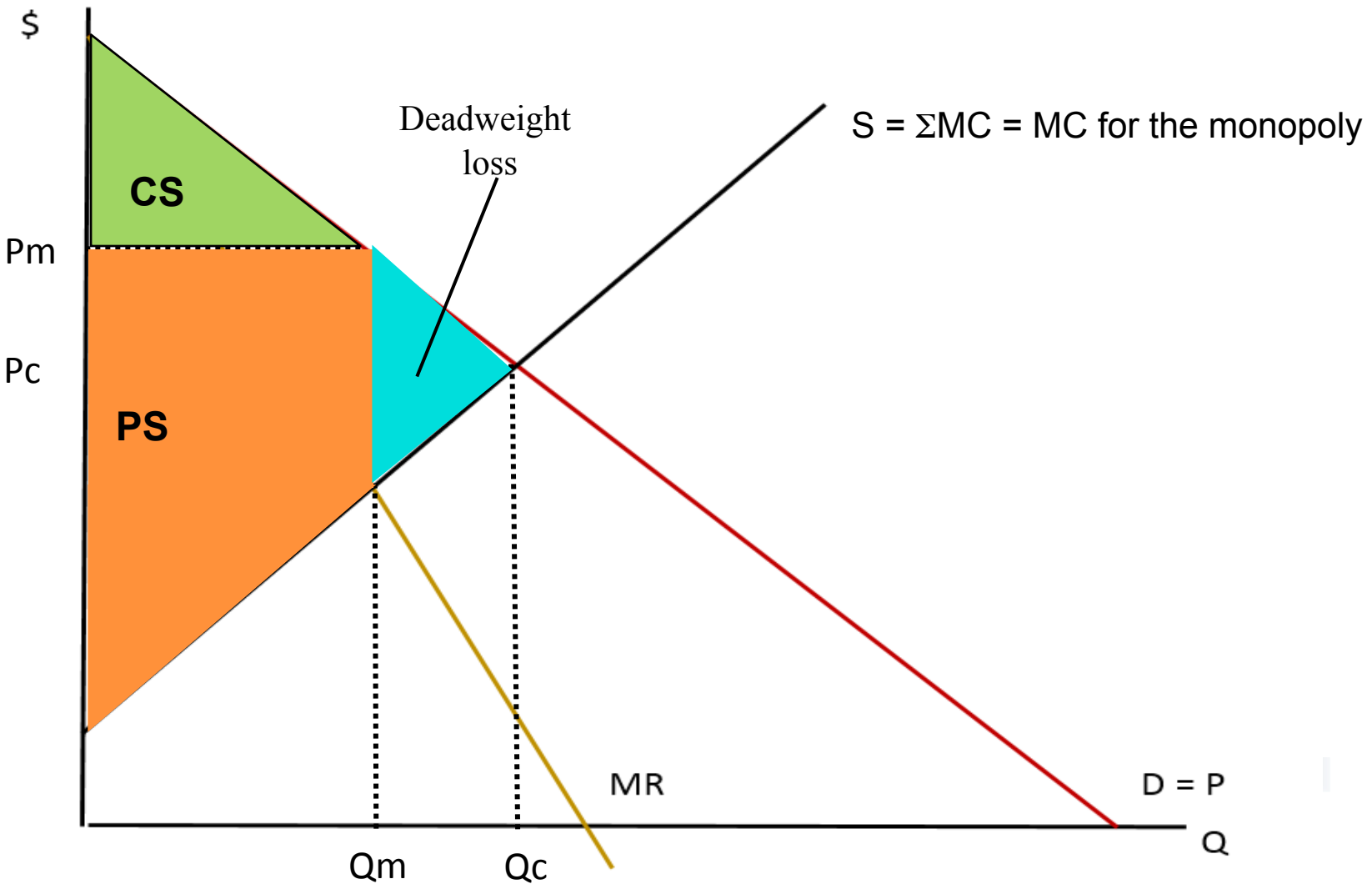
- The deadweight loss caused by a monopoly is similar to the deadweight loss caused by a tax.
- The difference between the two cases is that the government gets the revenue from a tax, whereas a private firm gets the monopoly profit.
- To keep things really simple, let's assume that MC is linear.



Recall: In perfect competition, the market S curve is a big aggregate MC curve, adding all the firms' MC curves together.



Now assume that a monopoly serves the market and it's as big as all the small PC firms combined. So, the monopoly's MC is the same as the PC market supply curve.


$
CS
Deadweight
loss
S = ΣMC = MC for the monopoly
Pm
Pc
PS
MR
D = P
Q
Qm
Qc

Test Yourself

- Why is there a deadweight loss due to monopoly?

- A) not enough producers
- B) too little quantity traded
- C) monopolists make positive profits
- D) all of the above

Numerical Example

Suppose we are given the following information about a monopoly market:

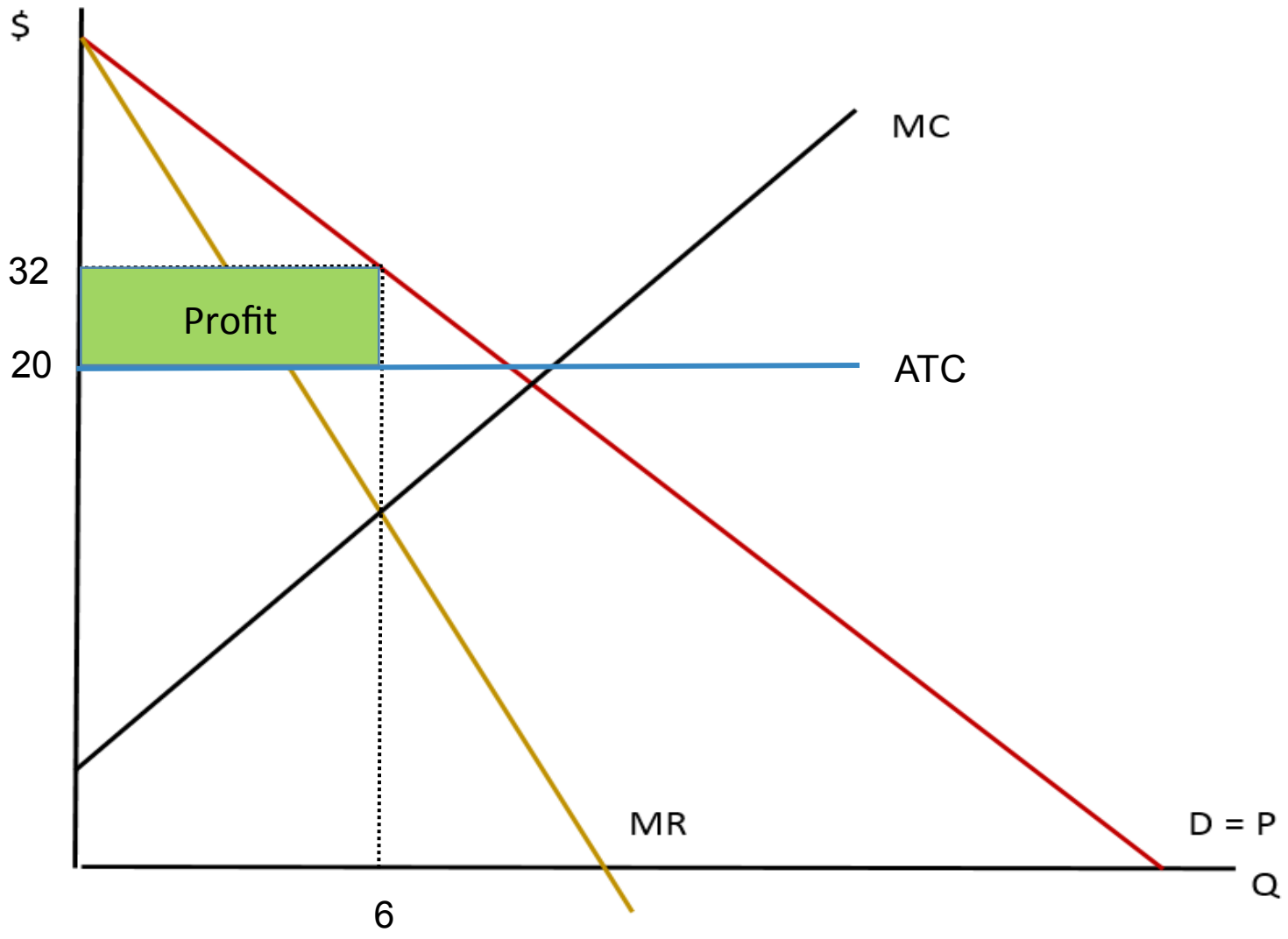
Demand: $P = 50 - 3Q$

$MR = 50 - 6Q$

$MC = 8 + Q$

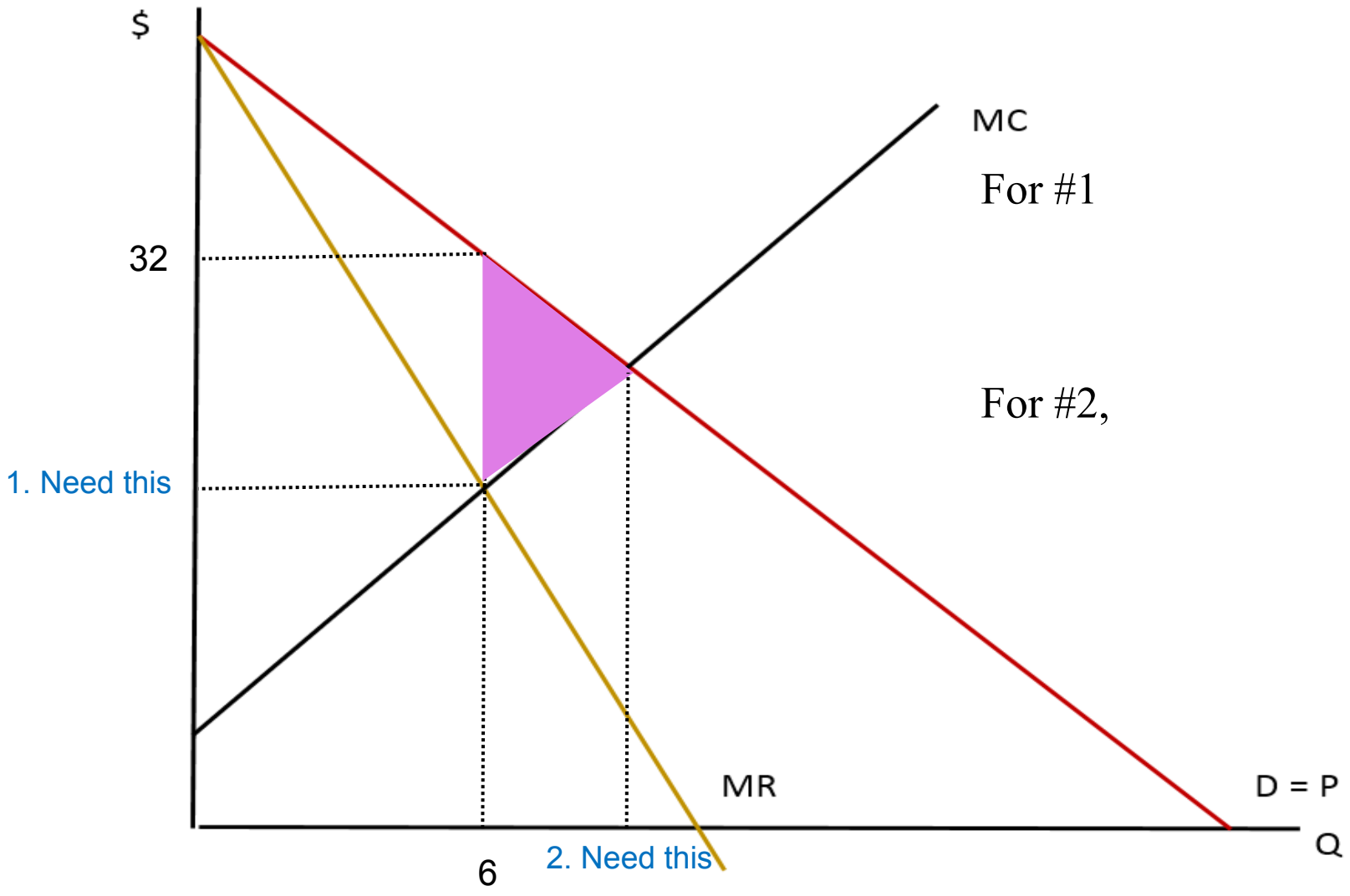
$ATC = 20$

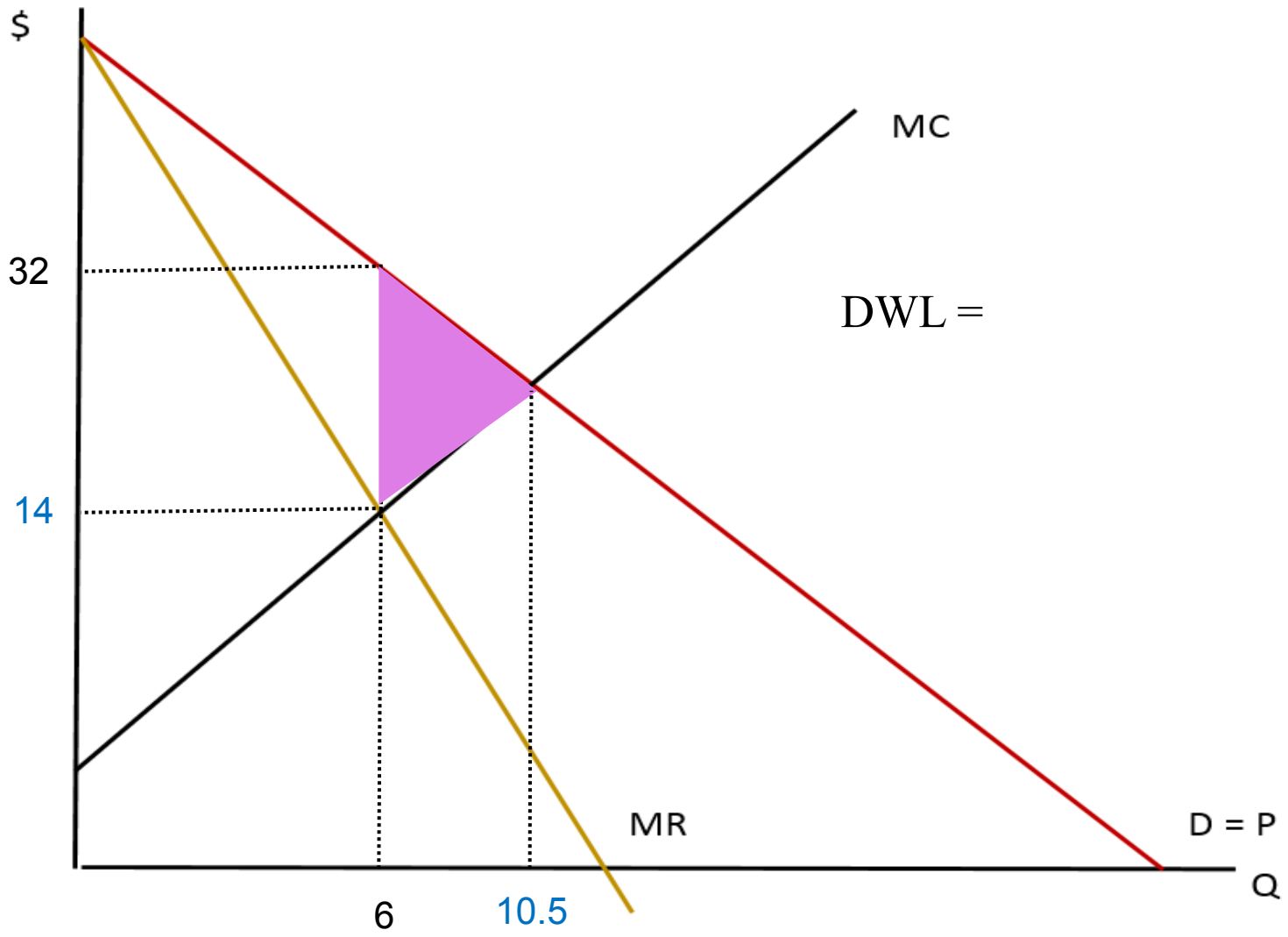
1. What are the monopoly's profits?


$
32
20
Profit
MC
ATC
MR
D = P
Q
6

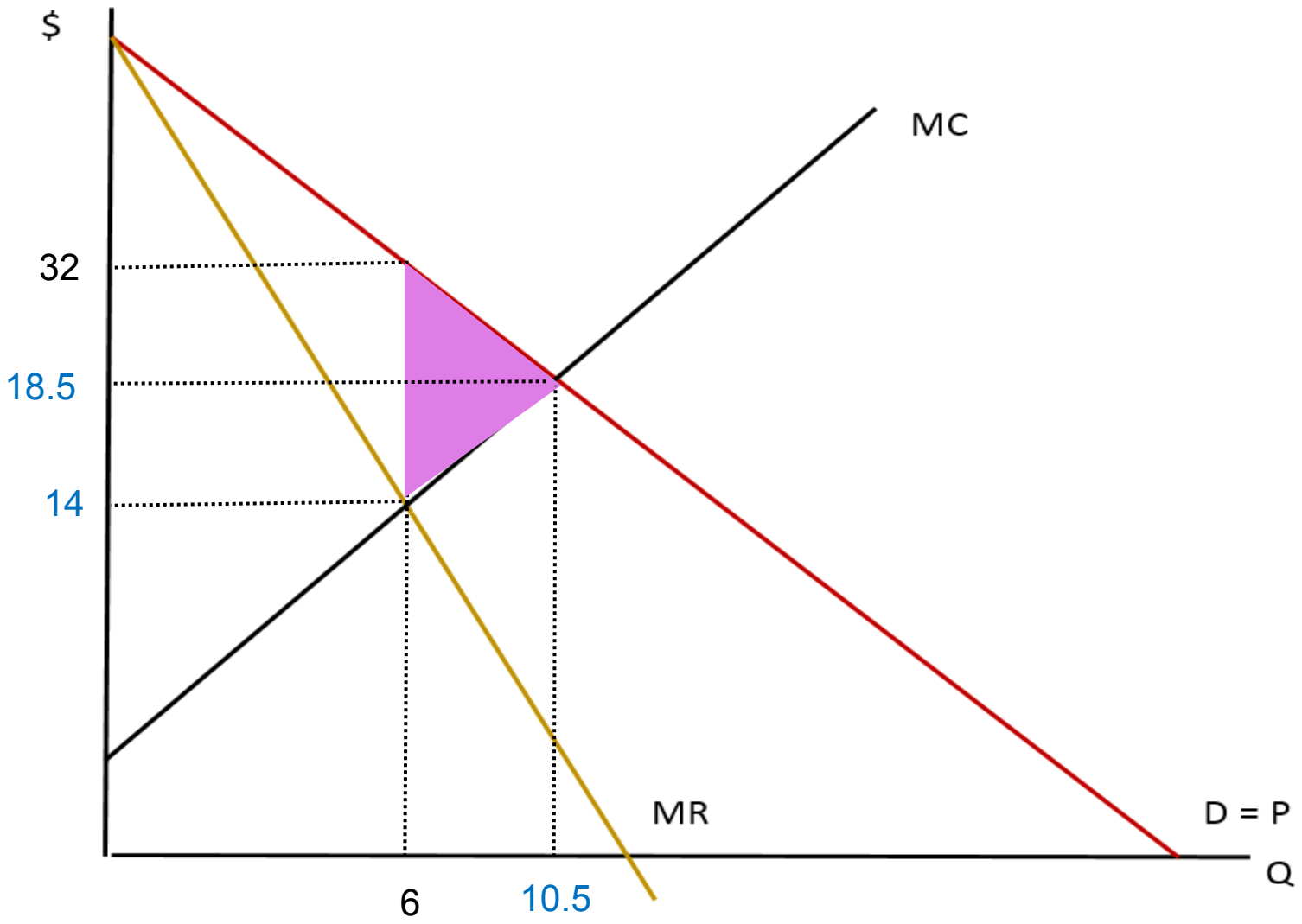
2. What is the DWL due to monopoly?

- This will be easier if we graph the situation first. We can omit the ATC curve to keep the diagram uncluttered.


$
MC
For #1
32
For #2,
1. Need this
MR
D = P
Q
6
2. Need this


$
MC
32
DWL =
14
MR
D = P
Q
6
10.5

3. If this were a competitive market, what would price be?


$
MC
32
18.5
14
MR
D = P
Q
6
10.5

4. What is the monopolist's PS?

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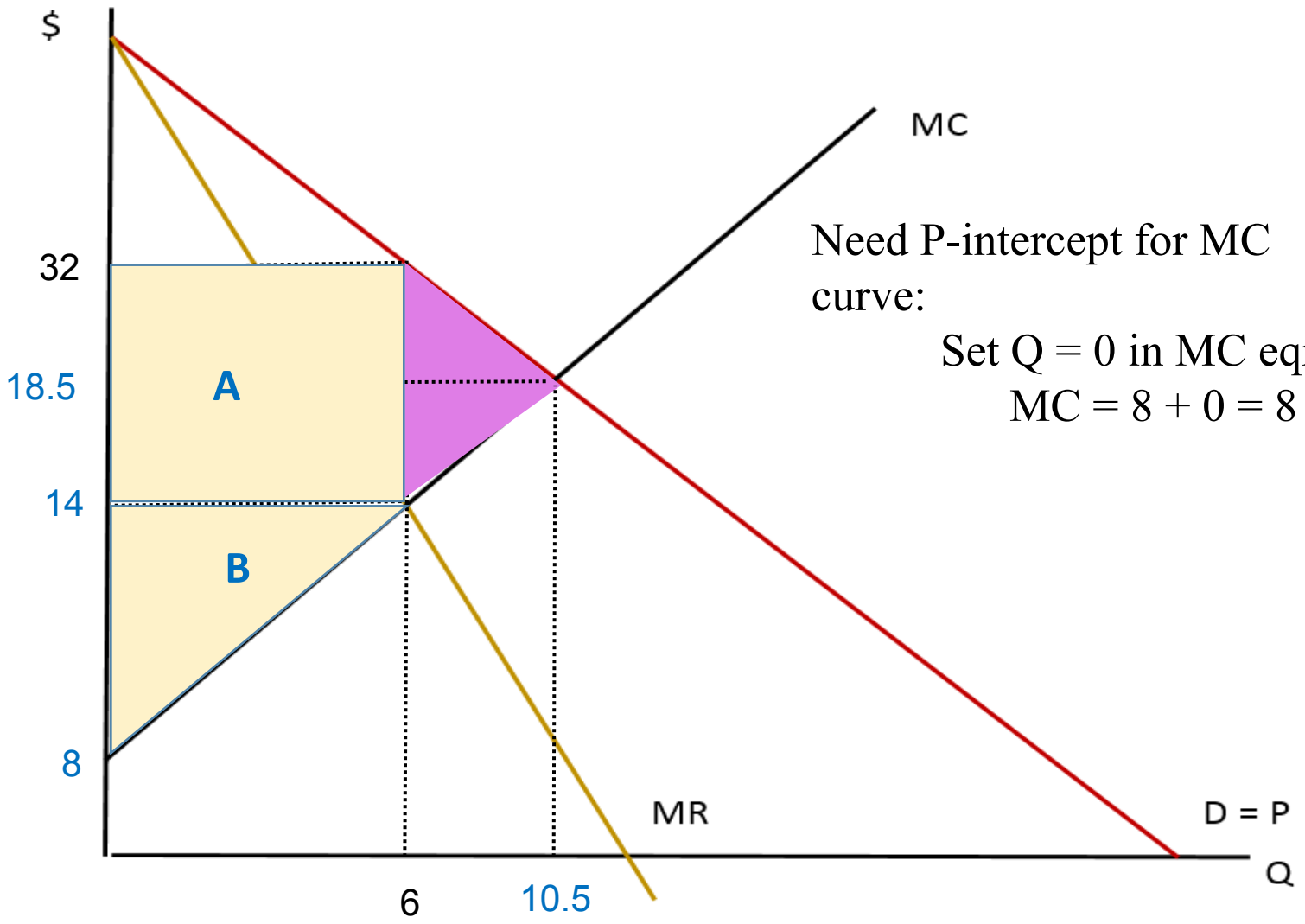


Need P-intercept for MC curve:

Set Q = 0 in MC eqn.:

MC = 8 + 0 = 8

Two ways to calculate:

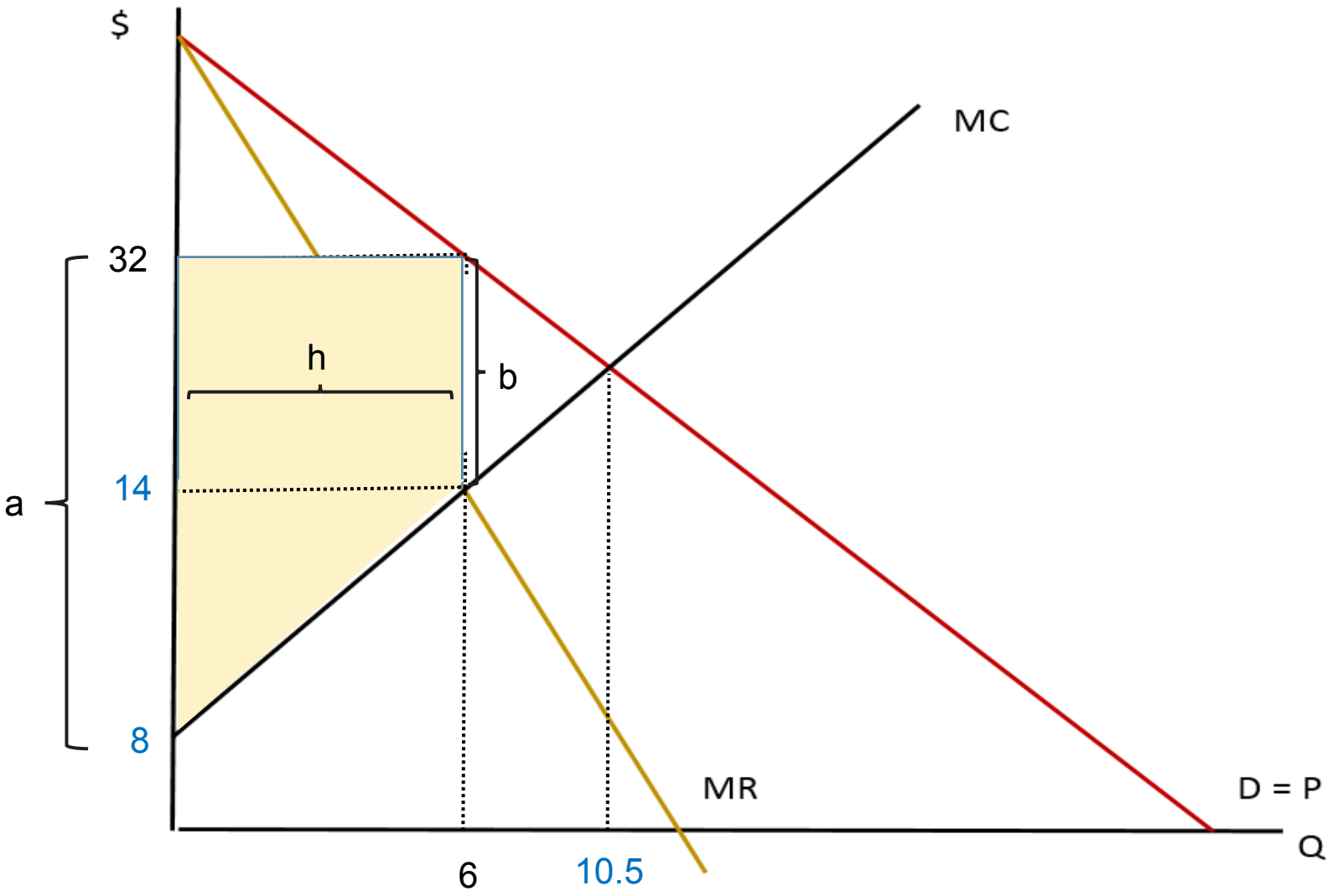
1. PS = area of □A + area of △B

   PS = 18(6) + ½(6)(6)

   = $126

2. If you remember the formula for the area of a trapezoid: Area = $\frac{a + b}{2} * h$ (see the next slide)

   So PS = $\frac{24 + 18}{2} * 6 = \$126$


$
MC
32
h
b
14
a
8
MR
D = P
Q
6
10.5

Test Yourself

- A monopolist faces demand of P = 320 – 2Q and has MR = 320 – 4Q. Its MC = 4Q. The firm will sell its output at a price of
- A) $53
- B) $160
- C) $240
- D) $40

Public Policy Towards Monopoly

- Since monopolies are socially inefficient, sometimes the government gets involved in one of 3 ways:

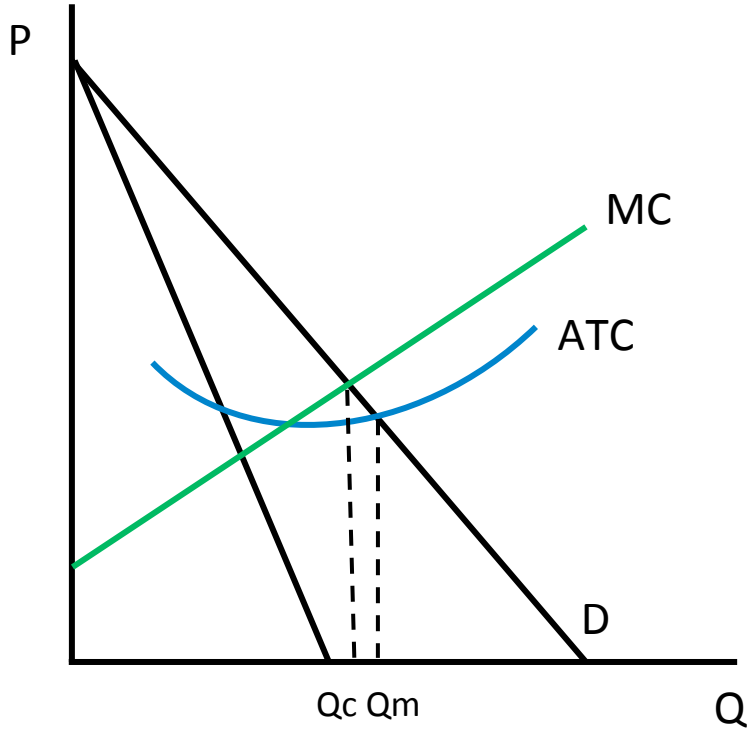
1. Competition Law

- legislation to prevent mergers that would make the market less competitive.
- Canada has the Competition Act.

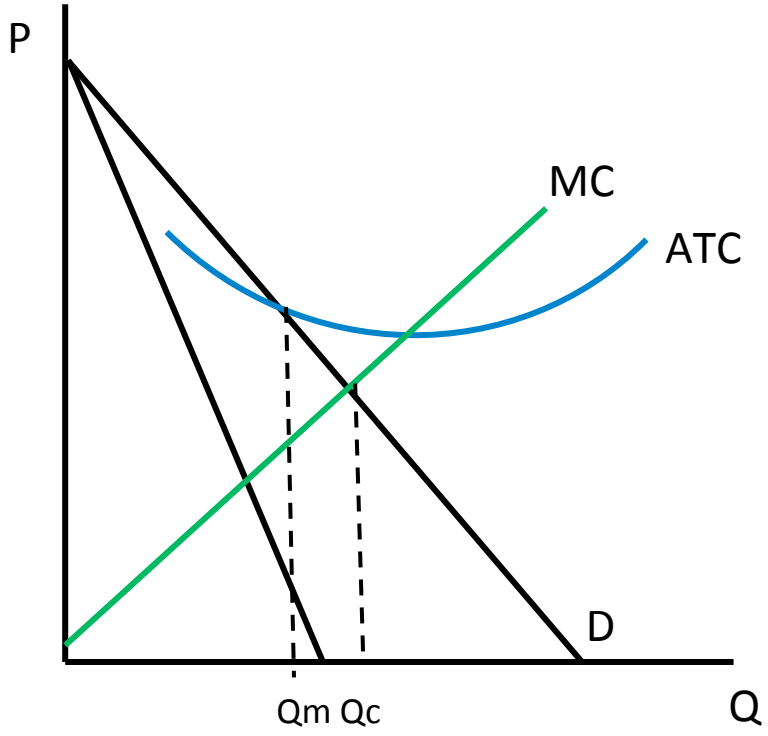
2. Regulation

- Government agencies regulate the prices a monopoly may charge.
  - often, will set P = ATC so firm earns normal profits.
  - if this price means the monopoly would operate at a loss and leave the market, the gov't could subsidize the firm.

Regulating that P = ATC



Monopoly would produce too much in this case.



Monopoly would produce too little in this case.

3. Public ownership

- Government can run the monopoly itself.
  - these are Crown Corporations in Canada.
  - examples: Canada Post, CBC.
- These may not be run efficiently because the government may not care as much as private owners about keeping costs down.

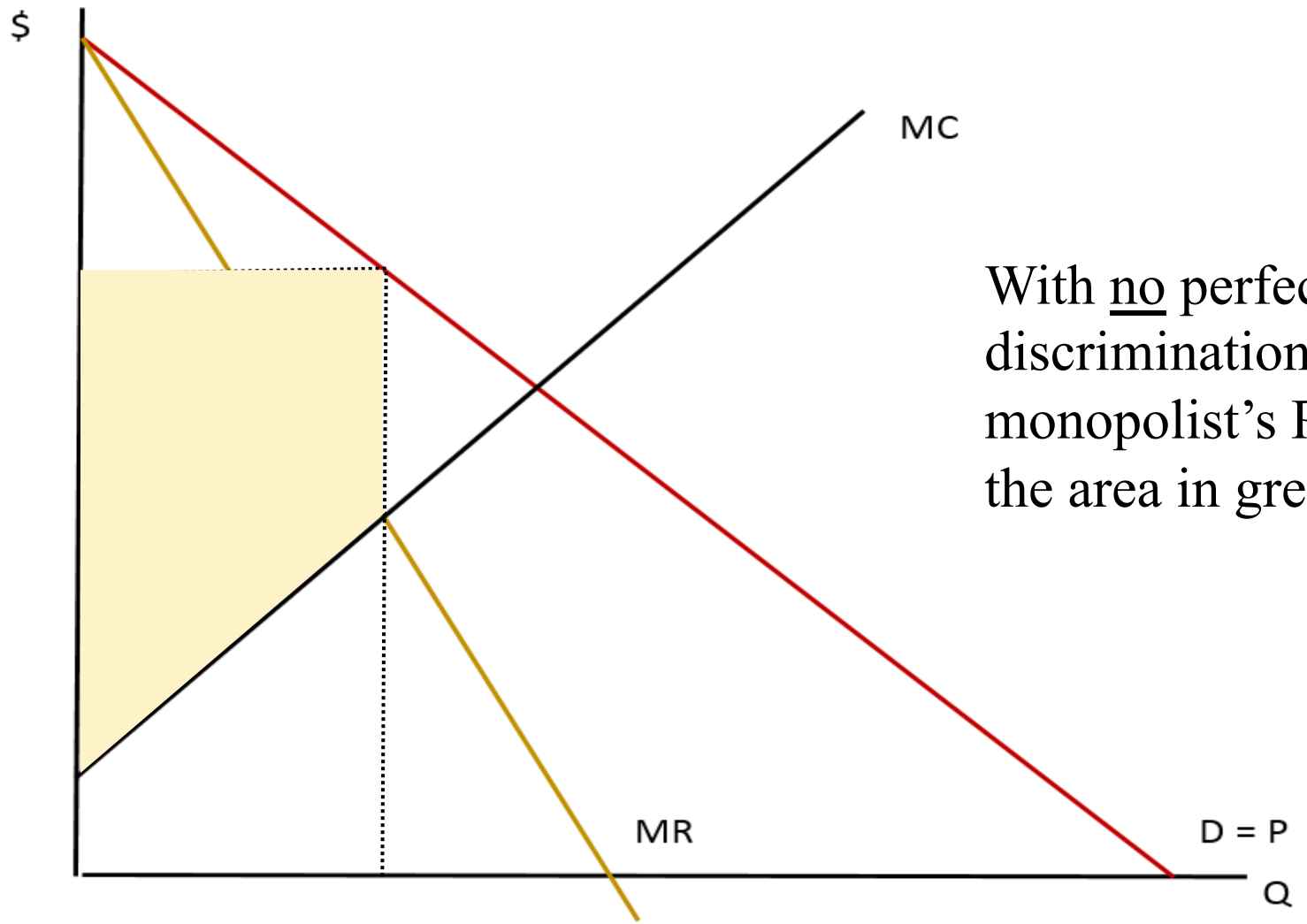
- The government may just decide to do nothing and stay out of it.
  - if the inefficiency is small by society's standard, the gov't may stay out of it.
  - may be political reasons, too.

Price Discrimination

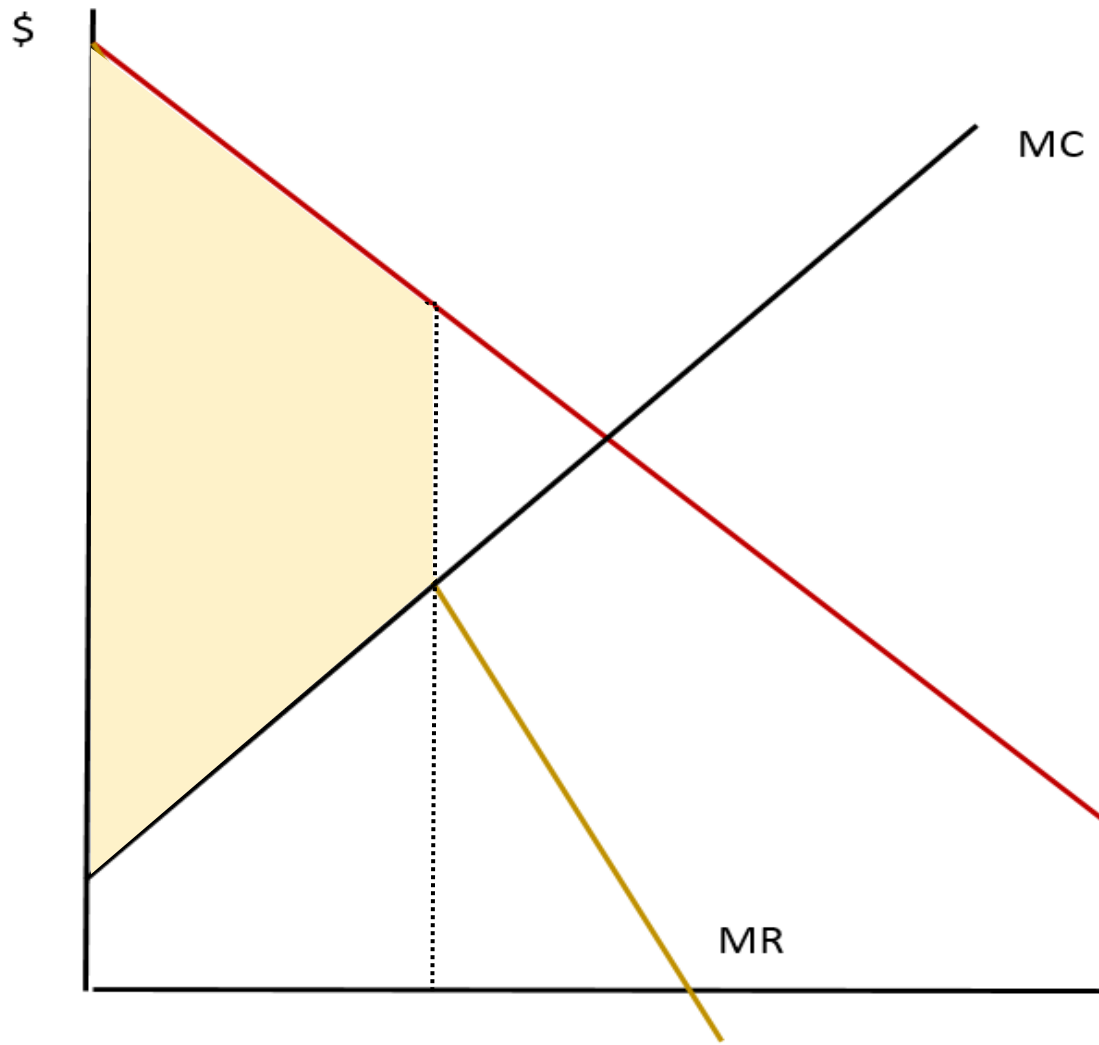
- Price discrimination: the business practice of selling the same good at different prices to different customers, even though the costs for producing for the two customers are the same.
- Price discrimination is not possible when a good is sold in a competitive market since there are many firms all selling at the market price.
- In order to price discriminate, the firm must have some market power and be able to segment the market according to consumers' willingness-to-pay.

- Perfect price discrimination (also called first degree price discrimination):
- If the monopolist knows *exactly* the willingness-to-pay of each customer, it can charge each customer a different price = exactly his/her willingness-to-pay.
- Hard to do in practice.
- Best example is an accountant who charges each client a different price for work done.

- If every customer pays the monopolist a price equal to their willingness-to-pay, the customer does not enjoy any benefits – no consumer surplus.
- The monopolist expropriates the entire consumer surplus.
- The monopolist's producer surplus is the area under the demand curve, above their marginal cost:

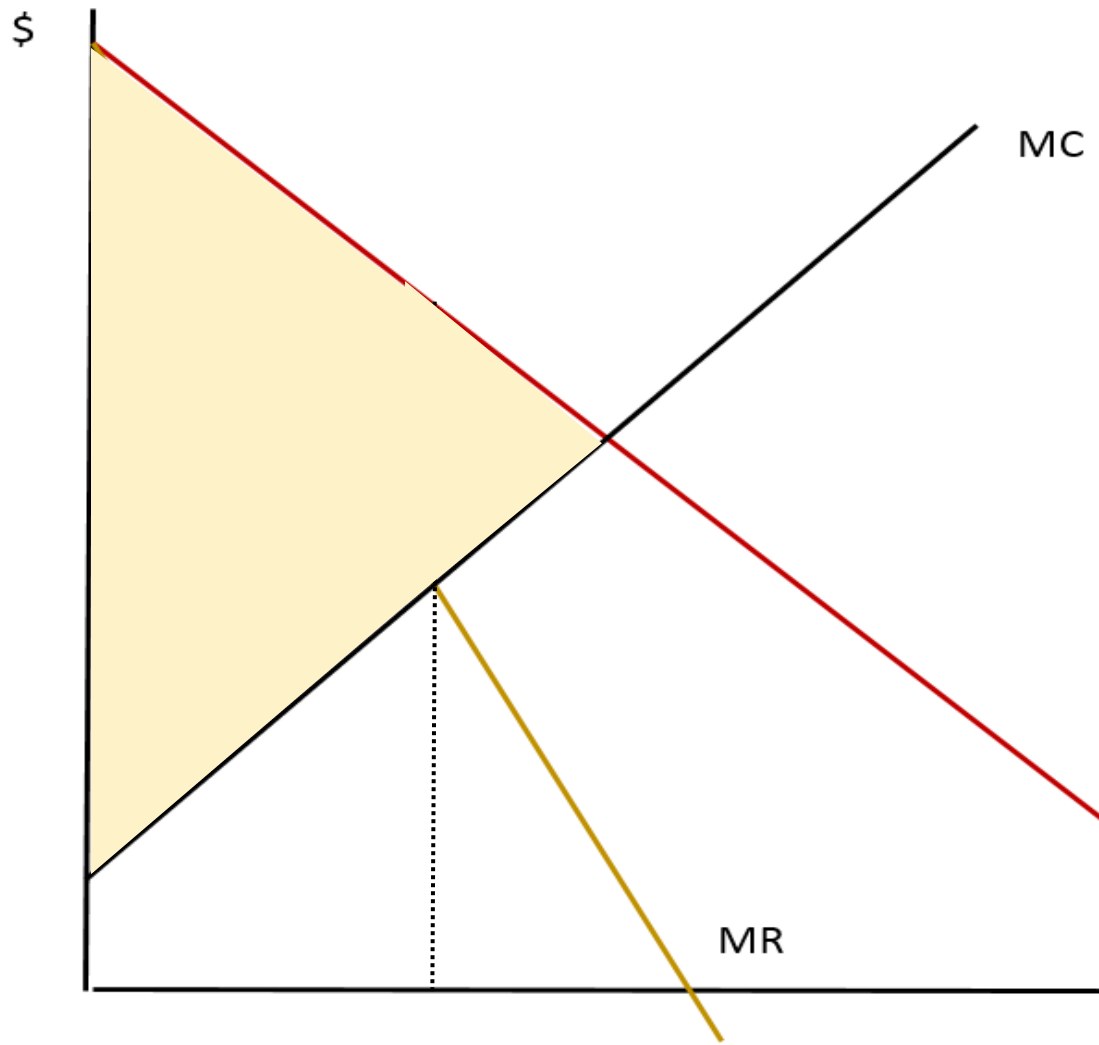


With no perfect price discrimination, the monopolist's PS is the area in green.



With perfect price discrimination, the monopolist's PS now includes the CS it expropriates from customers.
But the firm is not done yet….

- The monopolist can keep selling its output as long as the price received covers the firm's MC (it would still be making a profit on each good).
- It will sell the quantity that would be traded in a competitive equilibrium.
- So, with perfect price discrimination, there is no deadweight loss.
- The monopolist's PS is the total surplus available in the market as if it were a perfectly competitive market.



With perfect price discrimination, the monopolist can produce more than Qm and its PS is the total surplus available in the market.

Third Degree Price Discrimination

- Also called ordinary price discrimination.

- Usually, a firm can distinguish between different markets for its good.
- It can then charge different prices in each market.
- Much easier to do in practice than perfect price discrimination and we see it all the time.

Examples of Price Discrimination:

- If a firm can segment its market, it will charge a higher price in the market segment with more inelastic demand.

- Why inelastic?

Monopoly Supply Curve

- Recall that a perfectly competitive firm's SR supply curve is its MC above min AVC.
  - It chooses Q where P = MC.
  - There's a clear relationship between Q and P.

- A monopolist doesn't have that clear relationship.
  - It chooses Q where MR = MC and *then* chooses P.
  - Because a monopolist can't link Q directly to a price level, the monopolist does not have a supply curve.