



ECON104 TUTORIAL

Final Exam

Wednesday 21st October
1-2pm in F1

FINAL EXAM INFORMATION (2026)

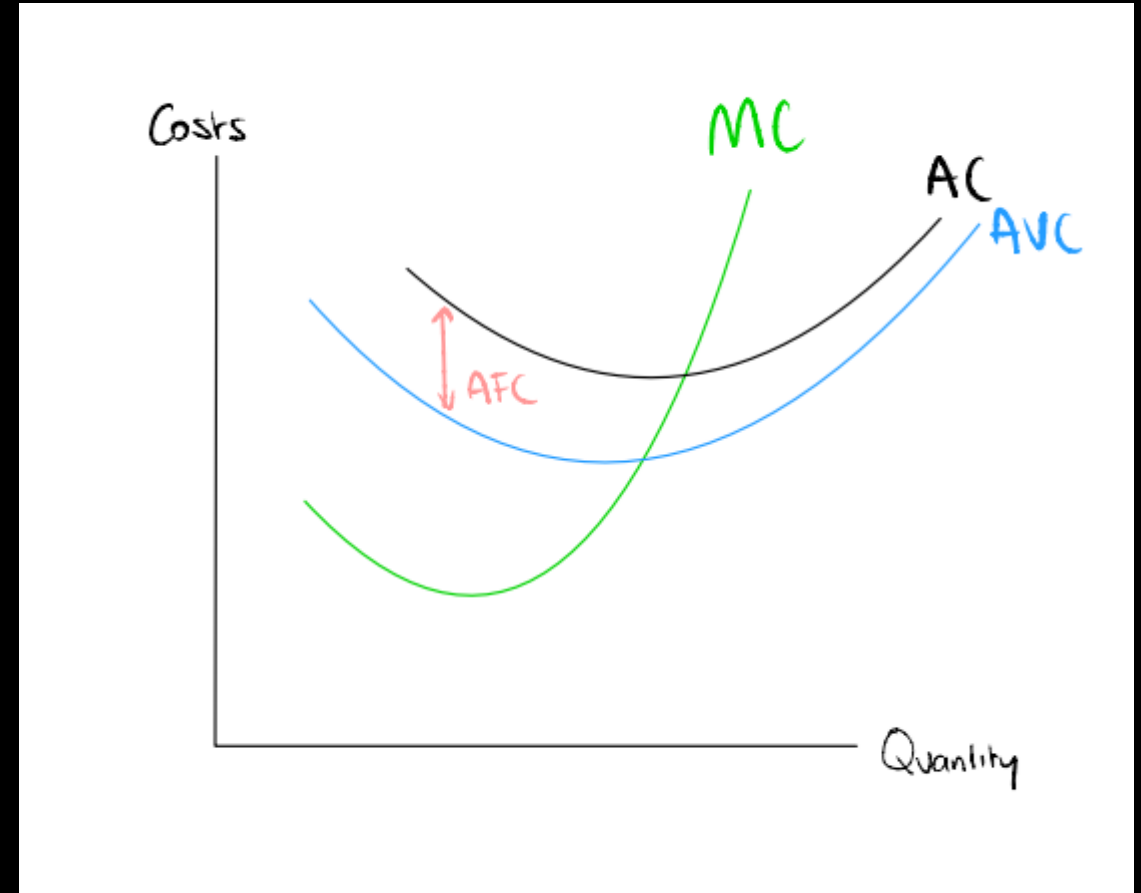
- Term Four Content
 - Lectures 25 - 36
 - Tutorials 8 & 9
 - 30% of your final grade
 - Multi-choice and short answer style questions

OVERVIEW – TERM 4

- Cost Curves
 - Profit levels
- Market Structures / Marginal Analysis
 - Perfect Competition
 - Monopolies
- Game Theory
- Price discrimination

Economic costs

- **Marginal cost curve:** the cost to produce one extra unit
- **Average cost curve:** total cost/quantity
- **Average variable cost curve:** total variable costs/quantity
- An increase in fixed costs only increases AC
- An increase in variable costs increase, AC, AVC and MC



Economic costs

Question:

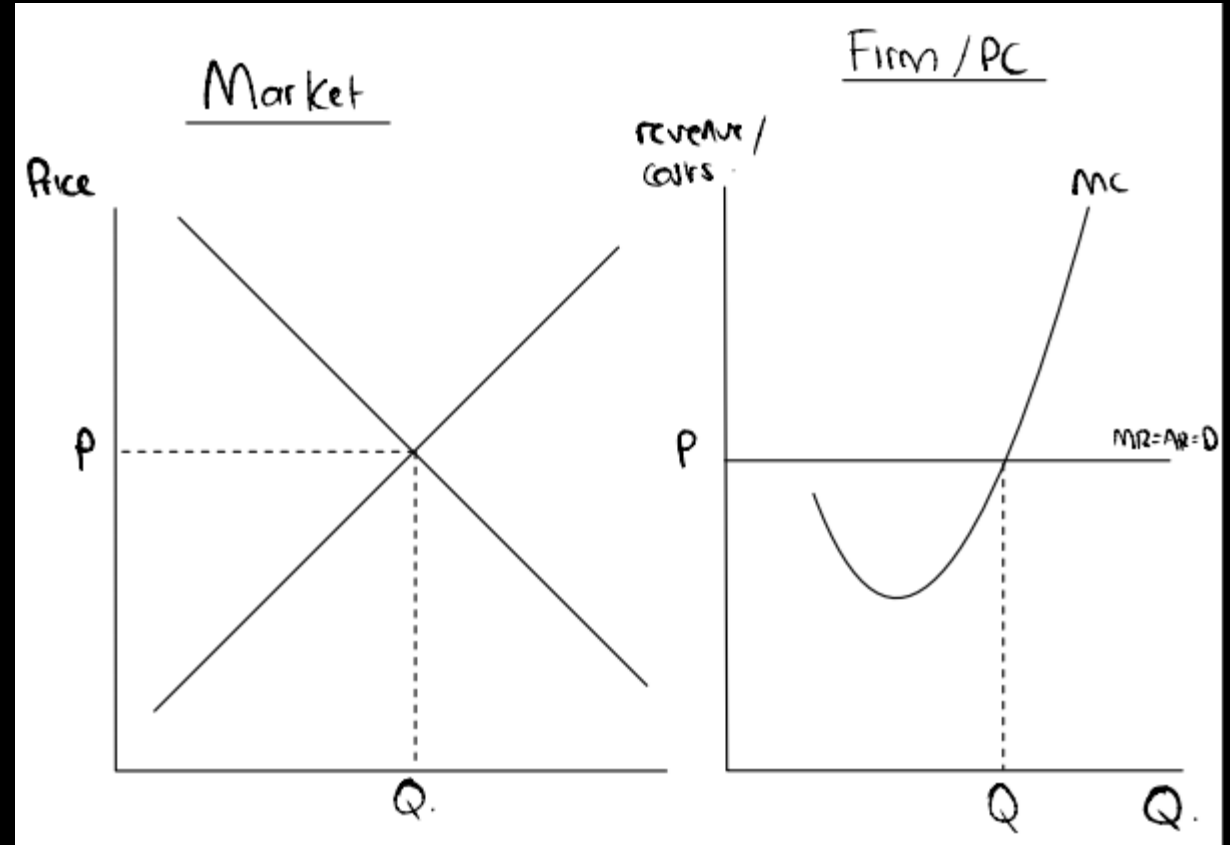
Why does MC intersect AC and AVC at their minimum points?

Perfect competition

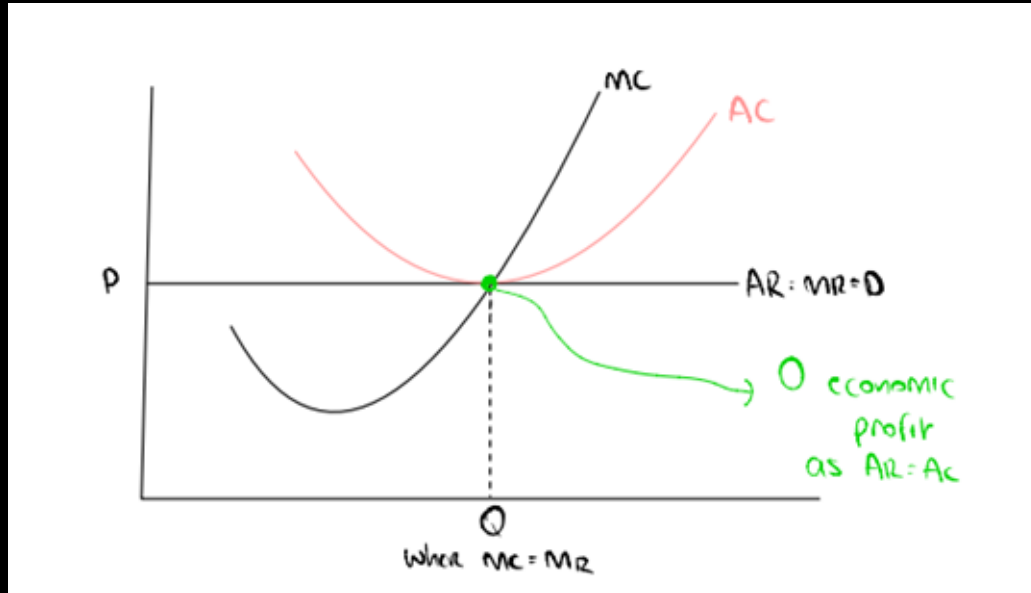
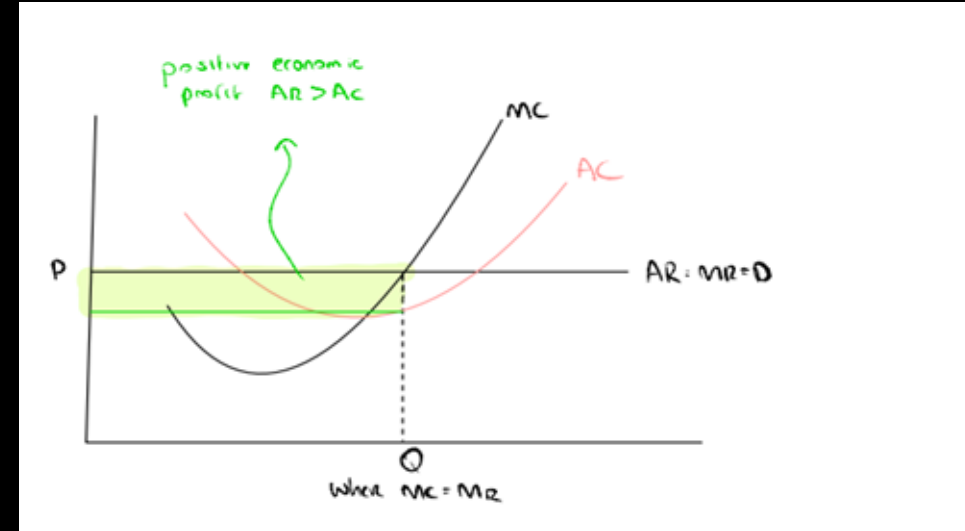
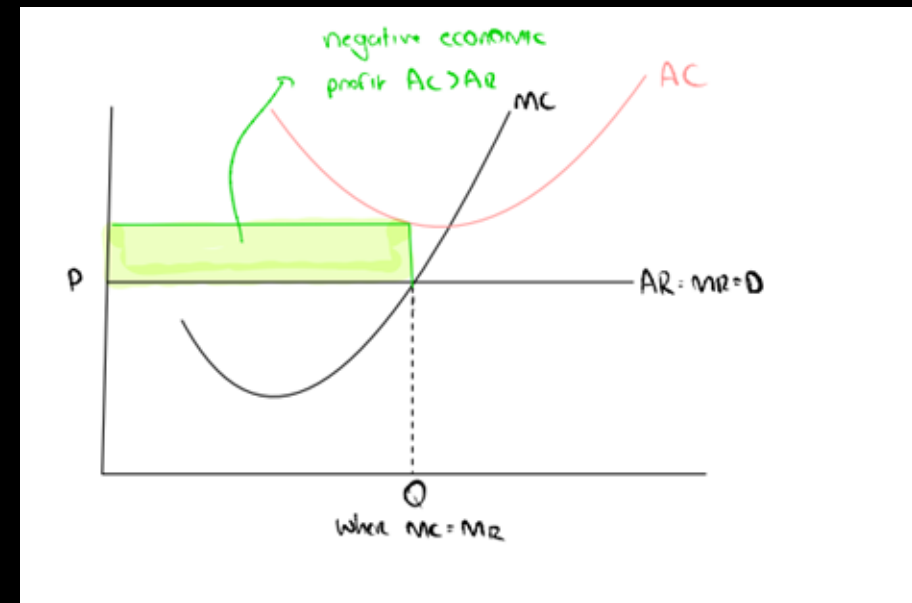
Characteristics

- Many sellers (lots of small firms)
- Many buyers (able to sell all of your product)
- Homogeneous products (all identical)
- Perfect information (both buyers and sellers know everything, no competitive advantage)
- No barriers to entry/exit (can move into and out of the market with ease)

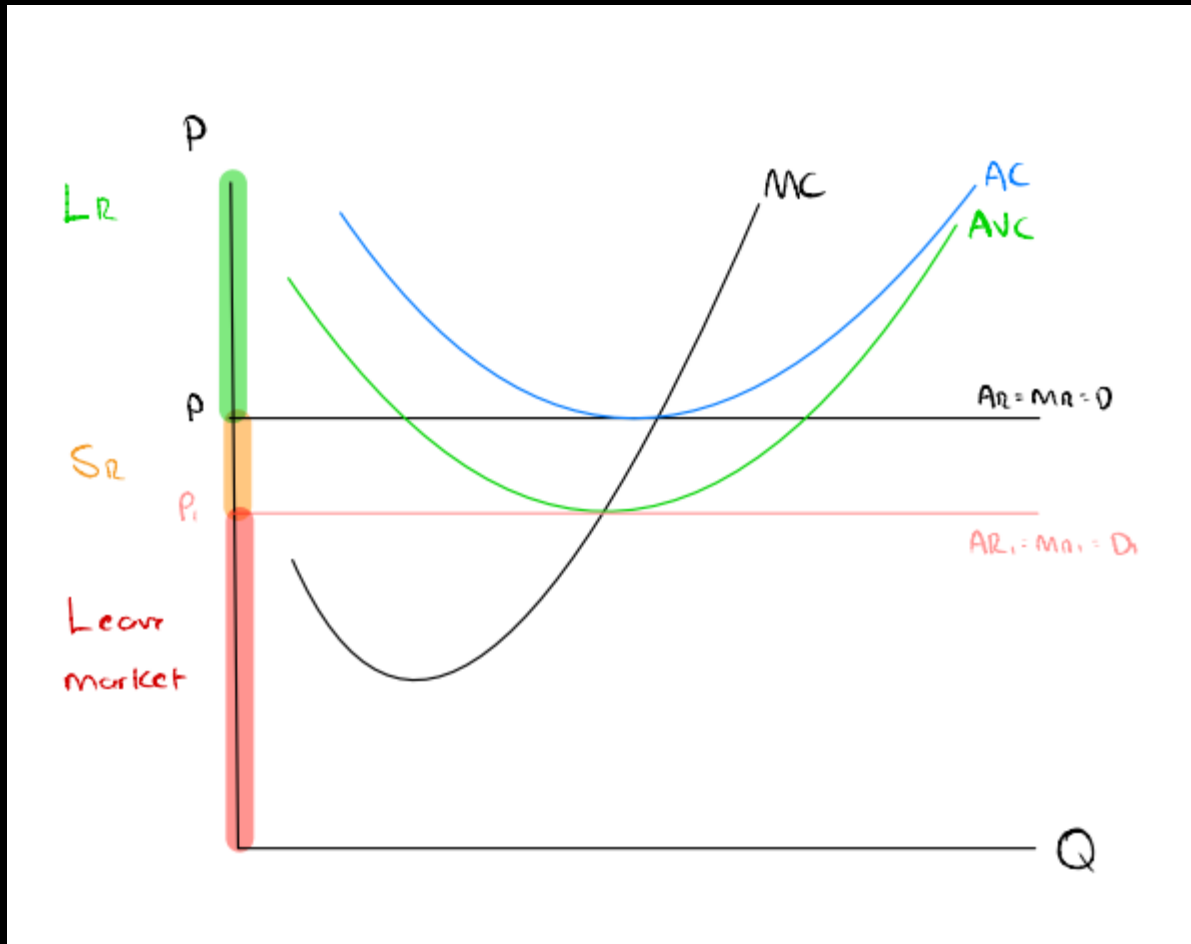
Why is the location where marginal revenue is equal to marginal cost the profit maximising location?



Perfect competition - profits



Break-even/shutdown points



At any price above P, firm is making economic profit so should stay in market both short and long term.

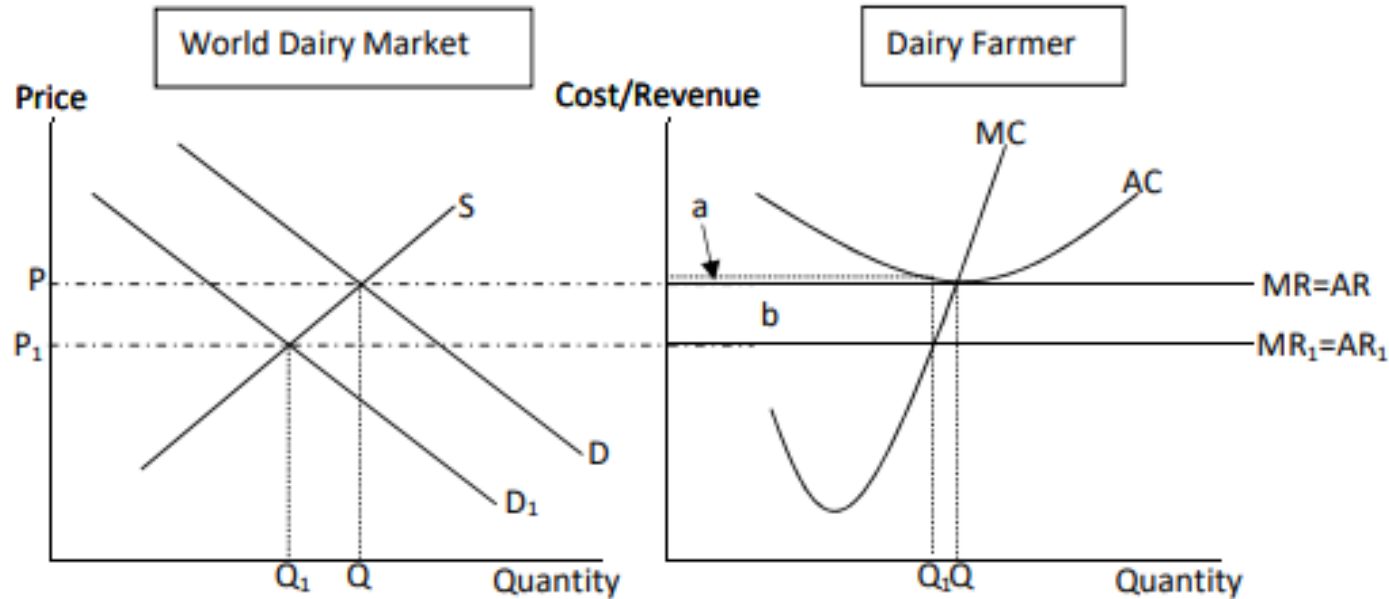
Break-even point: $AC = AR$

At any price between P1 and P, firm is covering all of their variable costs with some revenue left over to cover their fixed costs. So should stay in the market short term to pay off fixed costs, but as still making negative economic profit will leave market in the long term.

Shutdown point: $AVC = AR$

At any price below P1 the firm should leave the market as they will not be covering all their variable costs or any of their fixed costs, so would be better off leaving the market immediately and paying their fixed costs.

Perfect competition return to zero economic profit



1. What is the type of profit being earned?
2. What will happen to these firms that are earning these economic losses?
3. What does this do to the supply in the market?
4. What effect does this have on the market price?
5. What does this do to the individual firms MR and AR curve?
6. Is the firm still at profit maximising quantity?

(d) Explain (do not draw a diagram) how the marginal dairy farm would return to zero economic profit in the long run, assuming costs do not change. (5 marks)

This question is slightly adapted, but still relevant, so what you need to know is currently the market is operating at P_1 , Q_1 , this is because of a decrease in demand for Dairy.

What is the type of profit being earned? – subnormal/economic loss as price (AR) is now less than average cost

What will happen to these firms that are earning these economic losses? – they leave the market

What does this do to the supply in the market? – it decrease it, shifting supply curve left

What effect does this have on the market price? – it will increase it

What does this do to the individual firms MR and AR curve? – Moves it up as a price taker

Is the firm still at profit maximising quantity? – No, now $MR > MC$ at q_1 , so should increase quantity

They do this until zero economic profit is earned back at Q and no firms leaving/entering the market again

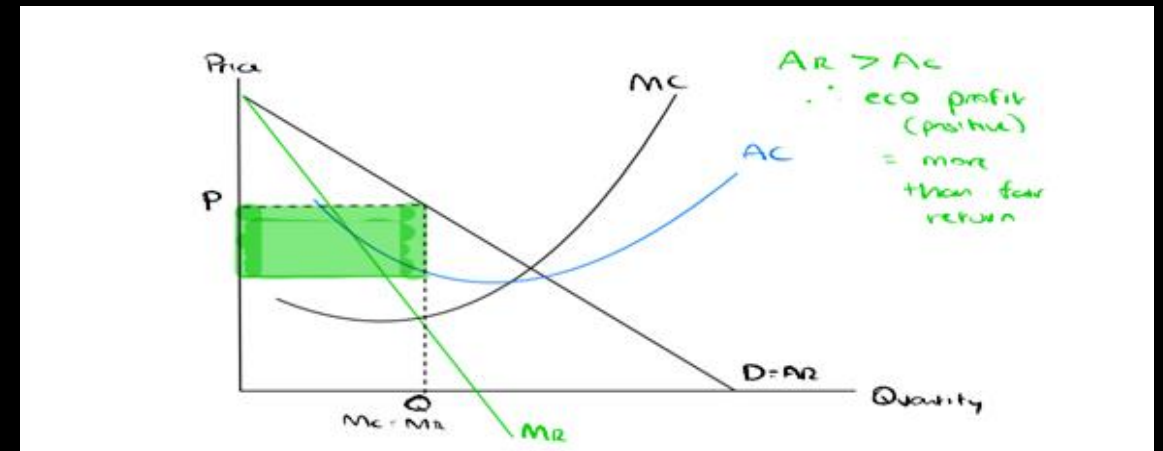
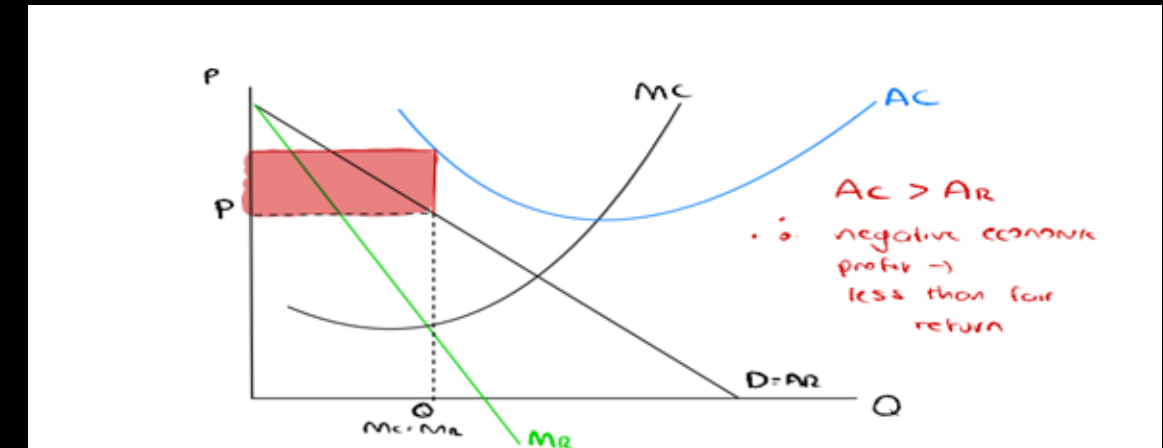
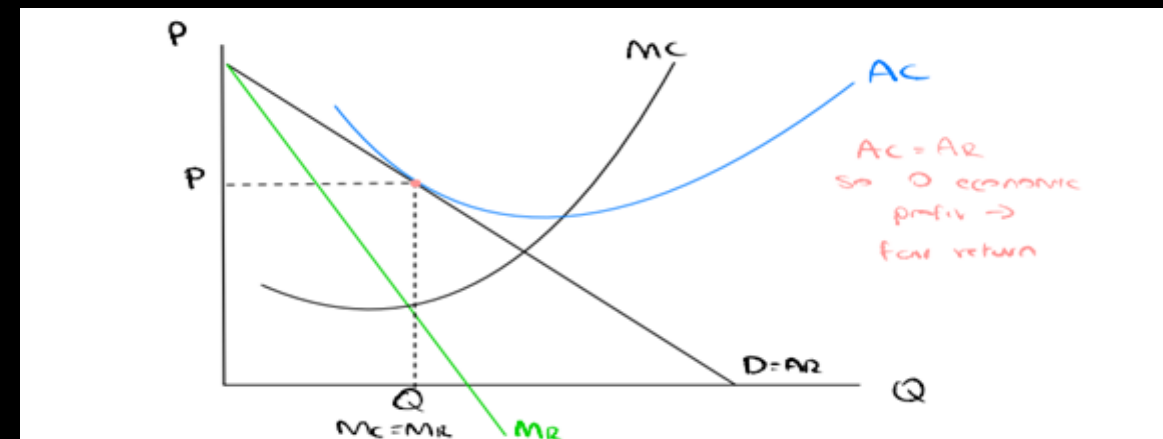
Monopoly

Characteristics

- One seller
- No or few close substitutes
- High barriers to entry for other firms
- Able to dictate either price or quantity

Key notes:

- Different MR and AR curves, both downward sloping
- MR will intersect halfway of AR
- Due to high barriers to entry, can maintain any type of profit in both short and long run
- Can work out profit maximising quantity the same way as perfect competition ($MR = MC$)



QUESTION

Question Two

(a)

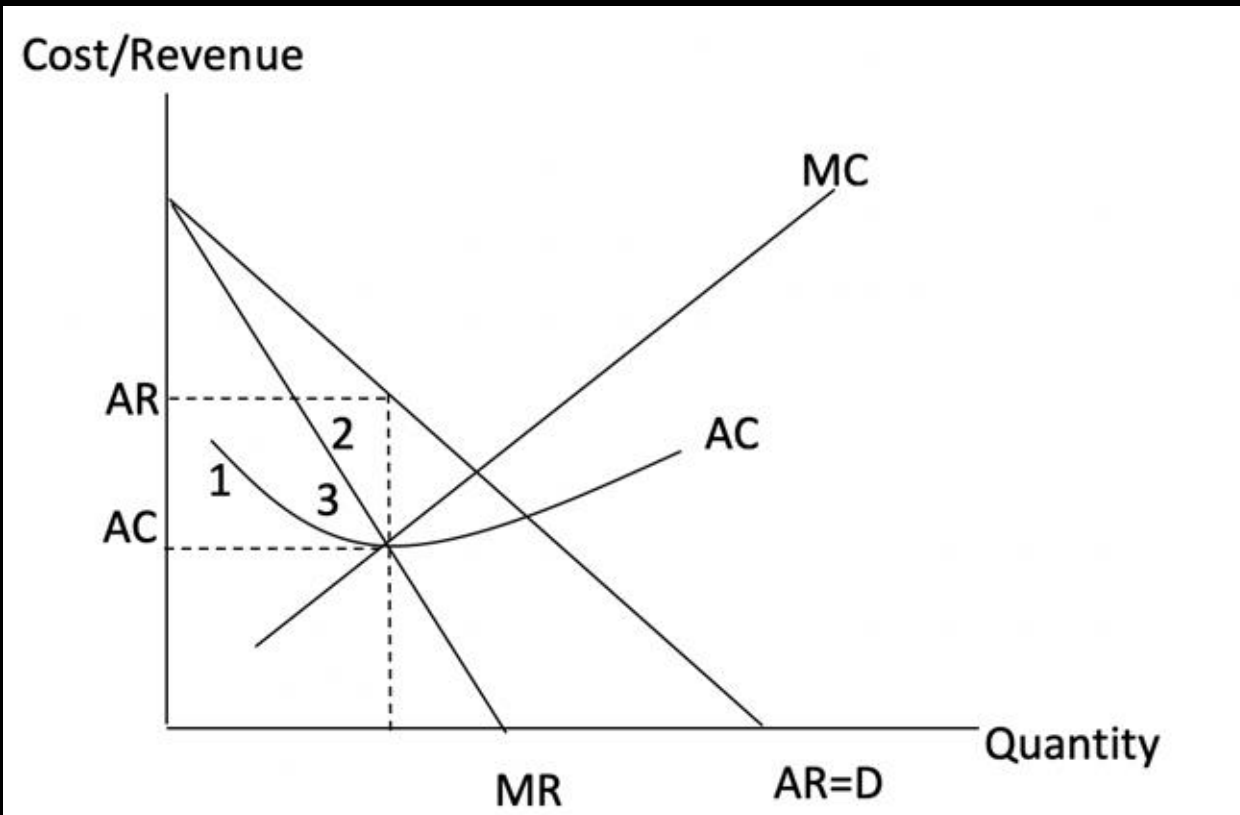
- (i) Copy the set of axis below into your answer booklets and show a profit maximising monopolist making positive economic profit. **(6 marks)**

QUESTION

Question Two

(a)

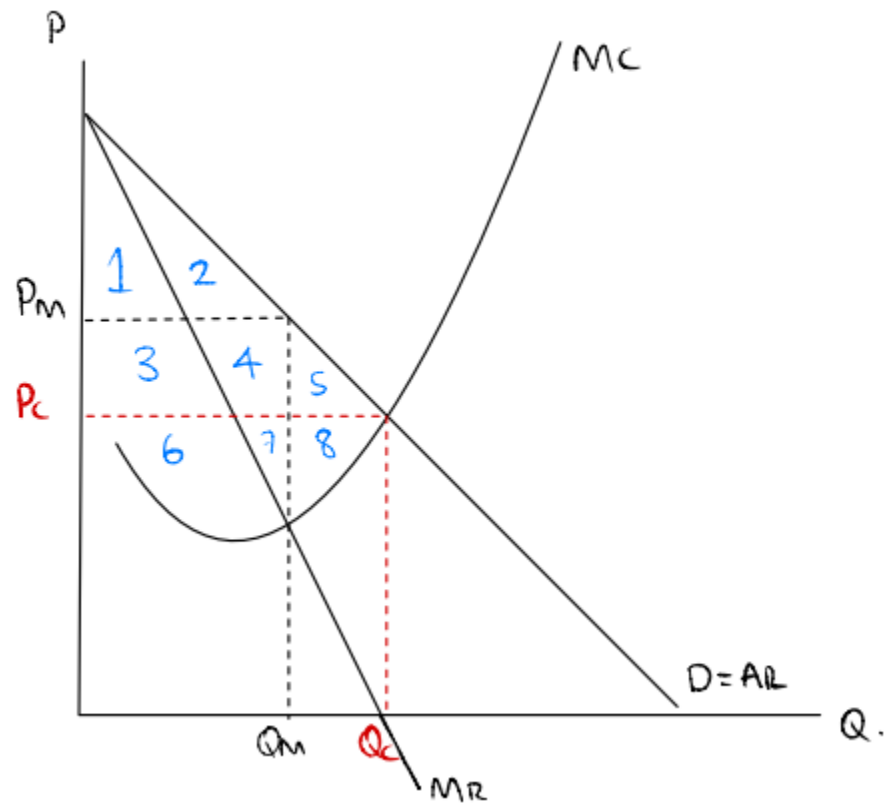
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Mark Breakdown

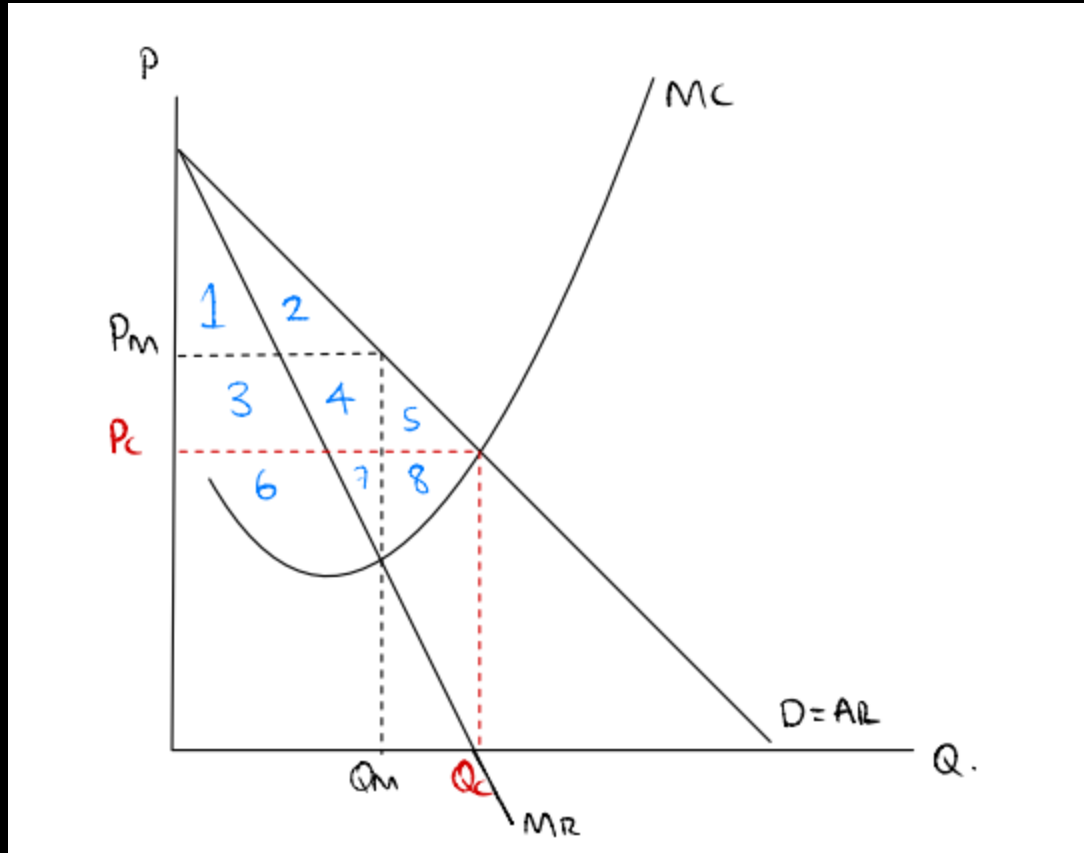
- AR drawn and labelled correctly (1/2 mark)
- MR drawn and labelled correctly (1/2 mark)
- MR x-axis intercept halfway between origin and AR curve intercept (1/2 mark)
- AC drawn and labelled correctly (1/2 mark)
- MC drawn and labelled correctly (1/2 mark)
- MC cuts AC at its lowest point (1/2 mark)
- AR at Q correctly identified on vertical axis (1/2 mark)
- AC at Q correctly identified on vertical axis (1/2 mark)
- Positive economic profit of areas 1, 2 and 3 correctly identified (1 mark) and labelled (1 mark)

Comparing Monopoly to PC



	Competitive	Monopoly
Price	P_C	
Quantity	Q_C	
CS		
PS		
Total surplus		
Deadweight loss		

Monopoly compared to Perfect competition



	Competitive	Monopoly	Change
Price	P_c	P_m	
Quantity	Q_c	Q_m	
CS	1,2,3,4,5	1,2	-(3,4,5)
PS	6,7,8	3,4,6,7	3,4 (-8)
Total surplus	1,2,3,4,5,6,7,8	1,2,3,4,6,7	-(5,8)
Deadweight loss		5,8	

Comments on Other Markets

Oligopoly- Several large firms

Duopoly – two sellers (a special case of oligopoly market)

Monopolistic Competition – Large market of small firms that sell slightly differentiated product

Game theory

Dominant strategy: where a player will do this option regardless of what the other player does

Nash equilibrium: Where neither person has an incentive to change their behaviour given the actions of the other

GAME THEORY QUESTION

Assume that Firm A and Firm B are both considering whether to use non-price competition or start a price war. The following pay-off matrix illustrates the profits (in \$M's) available to both firms arising from their joint actions. Firm A's profits are written first.

		Firm B	
		Non-price Competition	Price War
Firm A	Non-price Competition	(7, 7)	(2, 8)
	Price War	(8, 2)	(3, 3)

- (ii) Explain what a dominant strategy is and identify any dominant strategies that exist in the matrix. (3 marks)
- (iii) Which cell in the matrix will be the market result assuming no collusion between the firms? (1 mark)

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A dominant strategy is one a firm plays regardless of the actions of the other player. Firm A has a dominant strategy of price war. Firm B has a dominant strategy of price war.

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- (iii) Which cell in the matrix will be the market result assuming no collusion between the firms? (1 mark)

(price war, price war) or (3,3) or bottom right cell

GAME THEORY QUESTION

Firms A and B independently choose to Invest in R&D or Not Invest. Payoffs shown as (Firm A, Firm B):

	B: Invest	B: Don't Invest
A: Invest	(4,4)	(7,2)
A: Don't Invest	(2,7)	(5,5)

Q1. Does Firm A have a dominant strategy? Show your reasoning.

Q2. Does Firm B have a dominant strategy? Show your reasoning.

Q3. What is the Nash equilibrium? Explain why.

Q4. Is the Nash equilibrium the jointly optimal outcome? What does this tell us?

GAME THEORY QUESTION – ANSWERS (1)

Q1. Firm A dominant strategy: Invest

If B invests: A gets 4 (invest) vs 2 (don't) $\rightarrow$ invest. If B doesn't: A gets 7 (invest) vs 5 (don't) $\rightarrow$ invest. Invest is better regardless of B's choice.

Q2. Firm B dominant strategy: Invest

Same logic by symmetry. Invest is dominant regardless of A.

Q3. Nash equilibrium: (Invest, Invest) $\rightarrow$ (4, 4)

Neither firm wants to deviate unilaterally. If A invests, B's best response is invest ($4 > 2$), and vice versa. So neither has an incentive to change given the other's action.

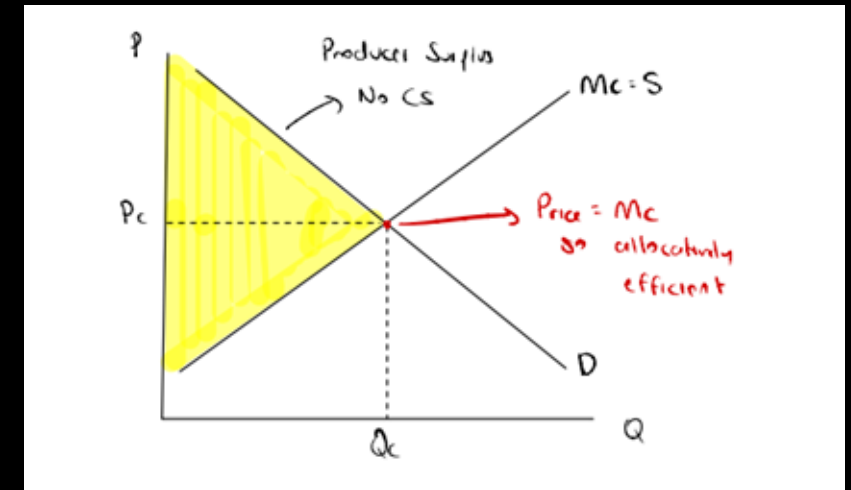
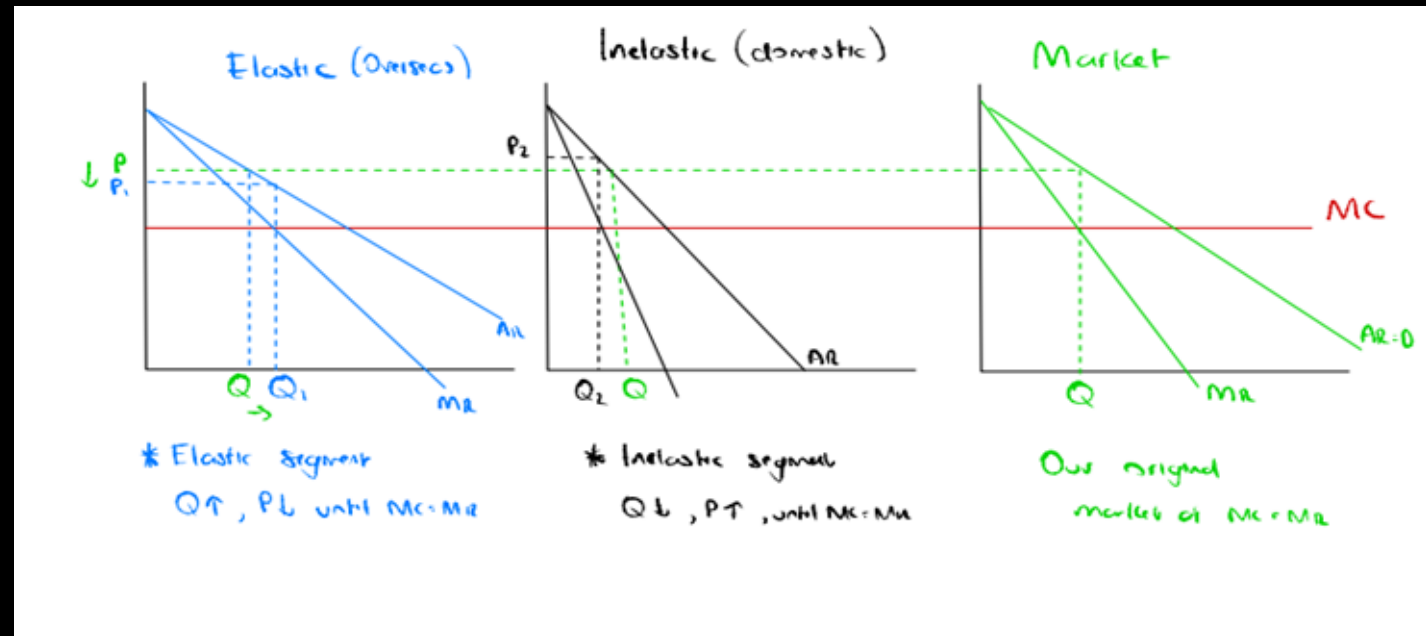
GAME THEORY QUESTION – ANSWERS (2)

Q4. Nash equilibrium is NOT jointly optimal

(Don't, Don't) $\rightarrow$ (5, 5) gives both firms higher payoffs. This is a prisoner's dilemma: individual rationality leads both firms to invest, leaving them collectively worse off than if they'd cooperated. The Nash equilibrium is stable but not efficient.

Price discrimination

- First degree: each person is charged their reservation price
- Second degree: discounts given based on bulk purchasing
- Third degree: market is segmented and charged based on elasticity



What conditions must hold for third degree price discrimination to work?

QUESTIONS?

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QUESTIONS AND FEEDBACK

Email: jna63@uclive.ac.nz





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LUCK!**