

Key

Last Name: _____ First Name: _____

Student #: _____

Instructions: This exam has a total of 4 questions. There are a total of 60 points on this exam and each question is worth 15 points. Complete all questions in the spaces provided on the exam sheet. Consulting notes, text, any persons, calculators, or any other resource is strictly prohibited. Any violation of academic integrity will be dealt with in accordance with Iowa State University policy.

1) Perfectly competitive markets and definitions.

6-points a) What are the 3 market characteristics of a perfectly competitive market?

- ⑤ i) Many Buyers and many sellers [each handle small portion of total Market]
- ② ii) Homogeneous Product
- ② iii) Free entry and exit (easy)

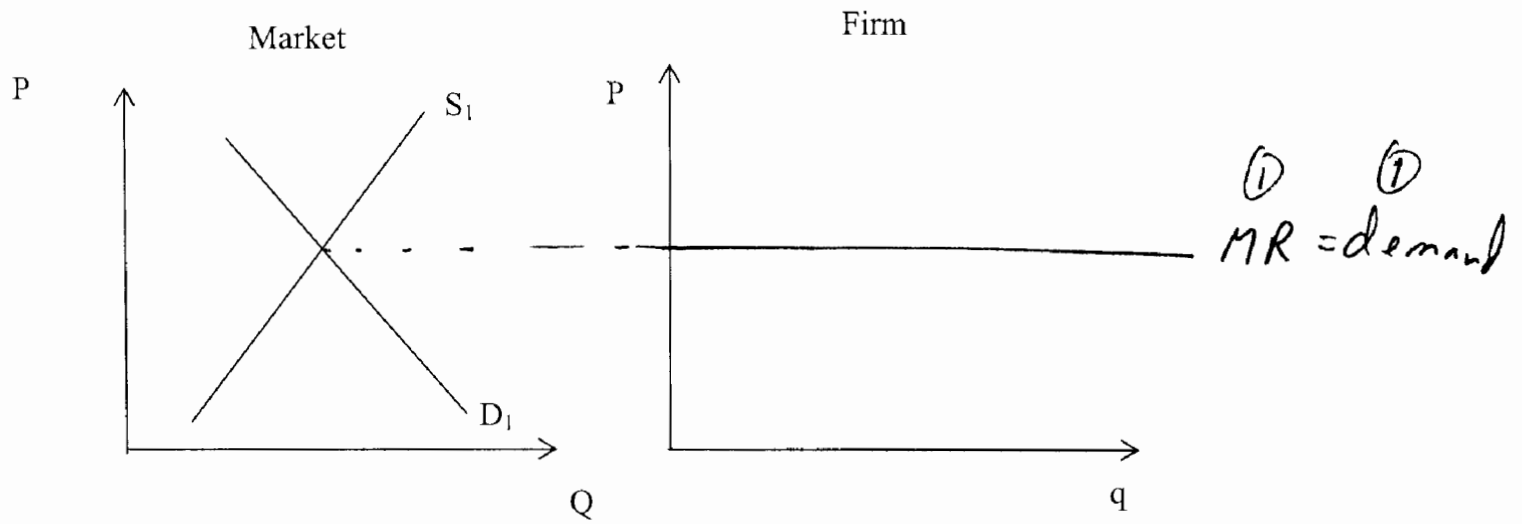
2-points b) What is the goal of a perfectly competitive firm in the short-run? What is the goal of a perfectly competitive firm in the long-run?

- ① Short-Run - Maximize Profit
- ① Long-Run - Maximize Profit

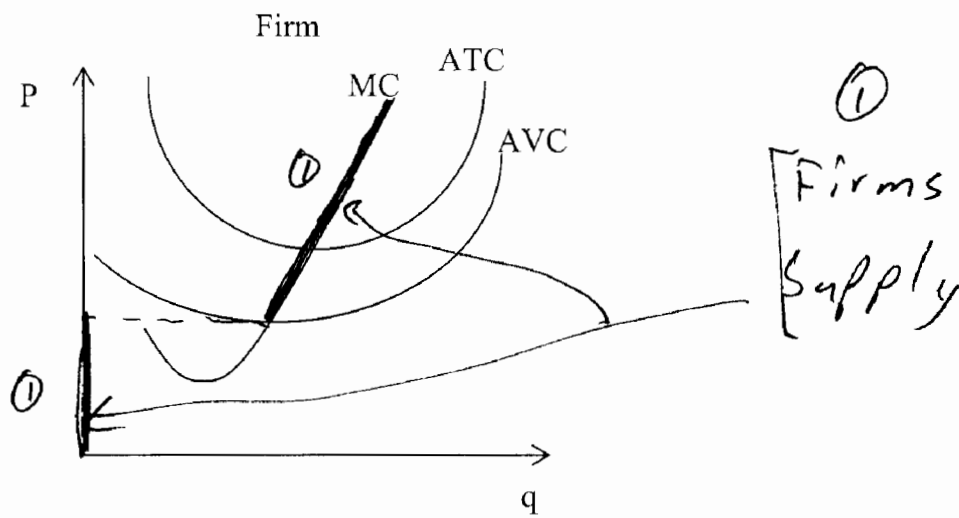
2-points c) What problem is in reference to the difference in goals between a firm's manager and its employees?

- ② Principal-Agent Problem

2-points c) The following figure represents the market demand and supply for wheat. Draw the demand and marginal revenue curve facing a perfectly competitive firm (i.e. a typical farmer) and label this appropriately.

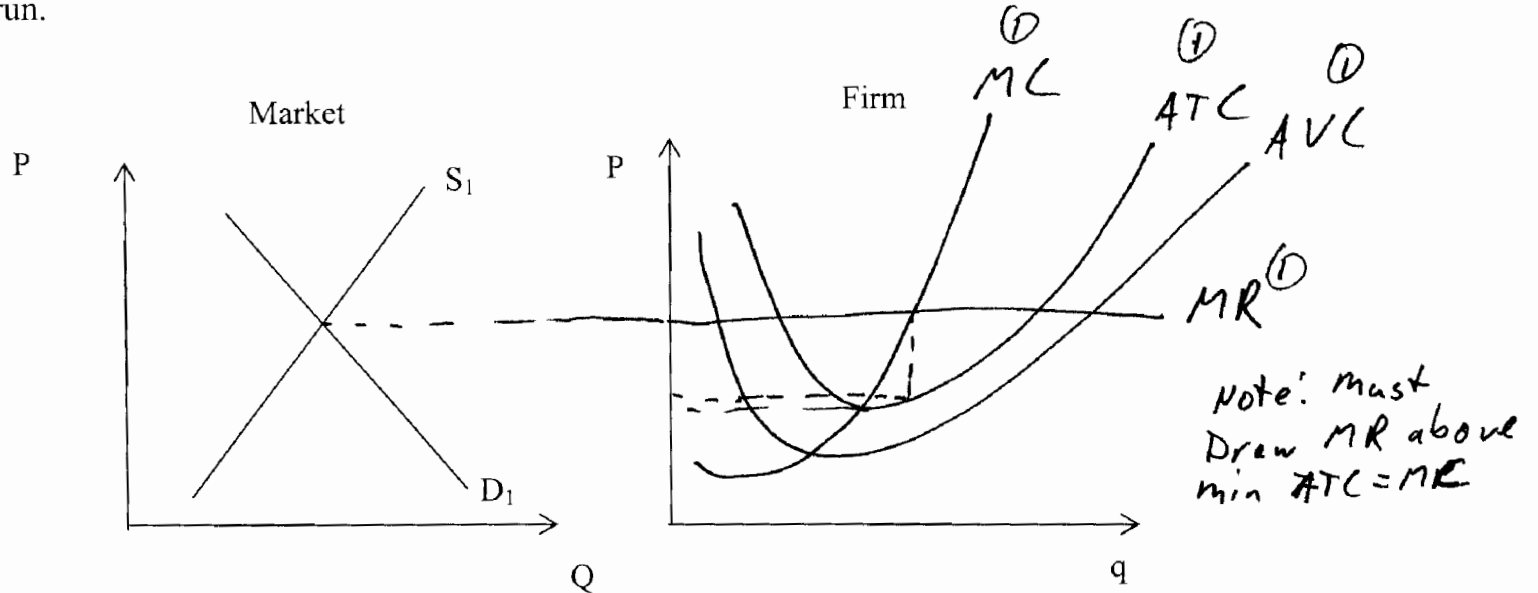


3-points d) On the following graph, draw in the firms supply curve.



2) Competitive markets and equilibrium.

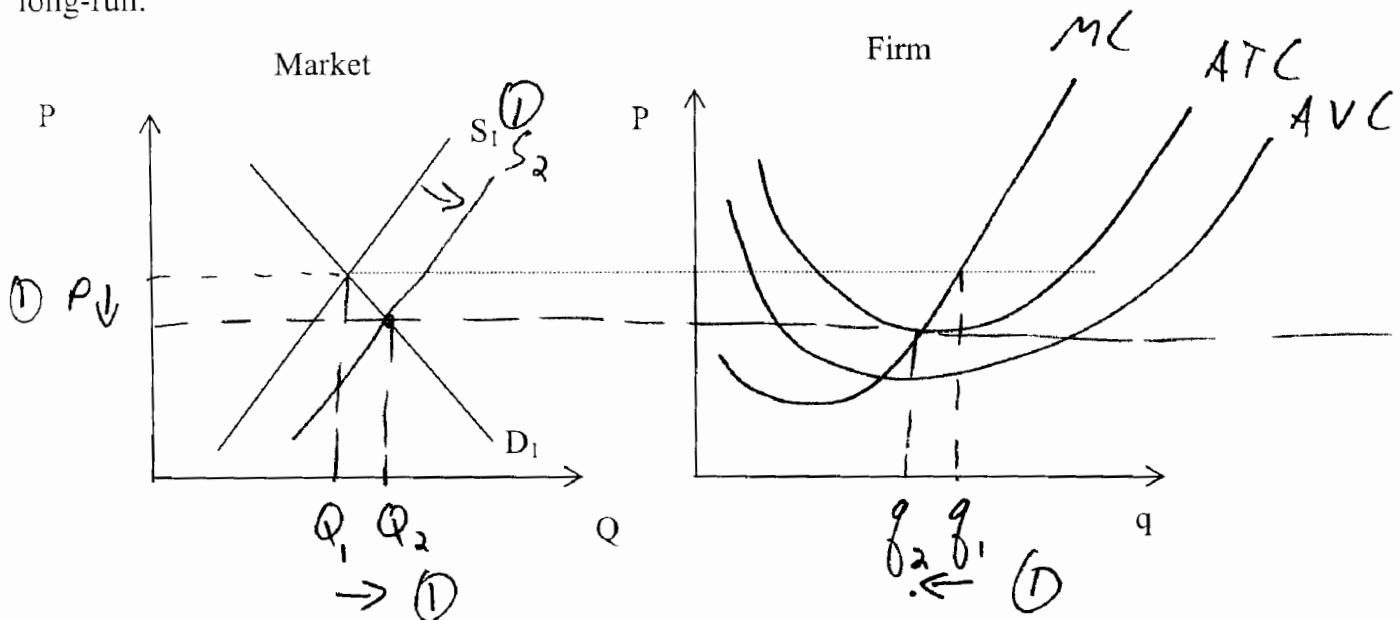
4-points a) A firm producing clock radios is making positive economic profits in the short-run. The market for clock radios is perfectly competitive. For this perfectly competitive firm draw their MR, MC, AVC, and ATC that would correspond to positive economic profits in the short-run.



2-points b) As a result of the short-run profits, will more firms enter or exit the market?

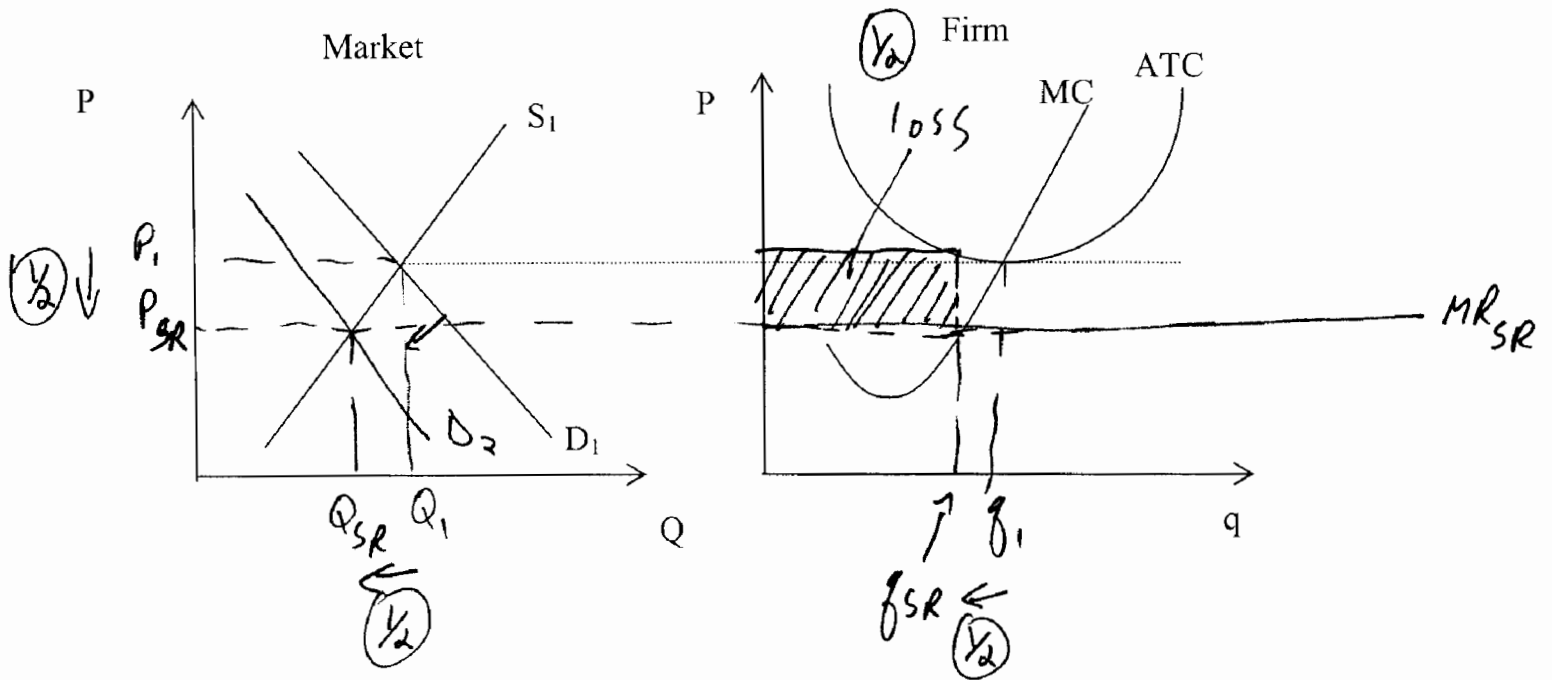
(2) More Firms will enter.

4-points c) Reproduce your results from part a) in question 2 on the graph below. Indicate what will happen to the market supply, market price, the market quantity, and firm quantity as a result of your response to question 2 part b). Also indicate what will happen to the firms profit in the long-run.

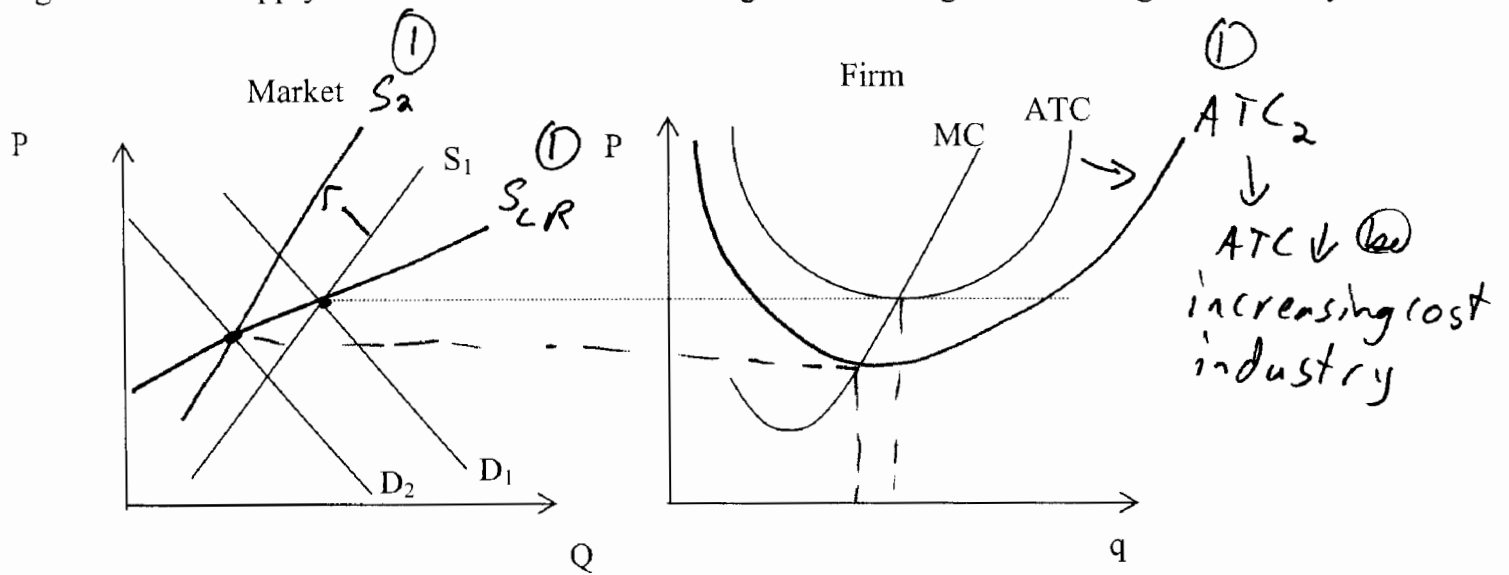


(1) The Firms profit will go to zero

2-points d) On the following graph indicate what would happen to the market and the firm in the SR if there is a decrease in market demand. Specifically, indicate what will happen to market price and quantity, the firms price and quantity, and indicate the firms profit (or loss).



3-points e) The following market is perfectly competitive and there has been a decrease in demand from D_1 to D_2 . Indicate what will happen to the market supply in the short run and the long-run market supply curve and the ATC in the long-run assuming an increasing cost industry.



3) Monopolies

2-points a) There are two forms of monopoly we discussed in class. One is government enforcement of intellectual property. What is the other type and why does it exist (this deals with its cost structure)?

Natural Monopoly - Economics of Scale [exists because of] ^①

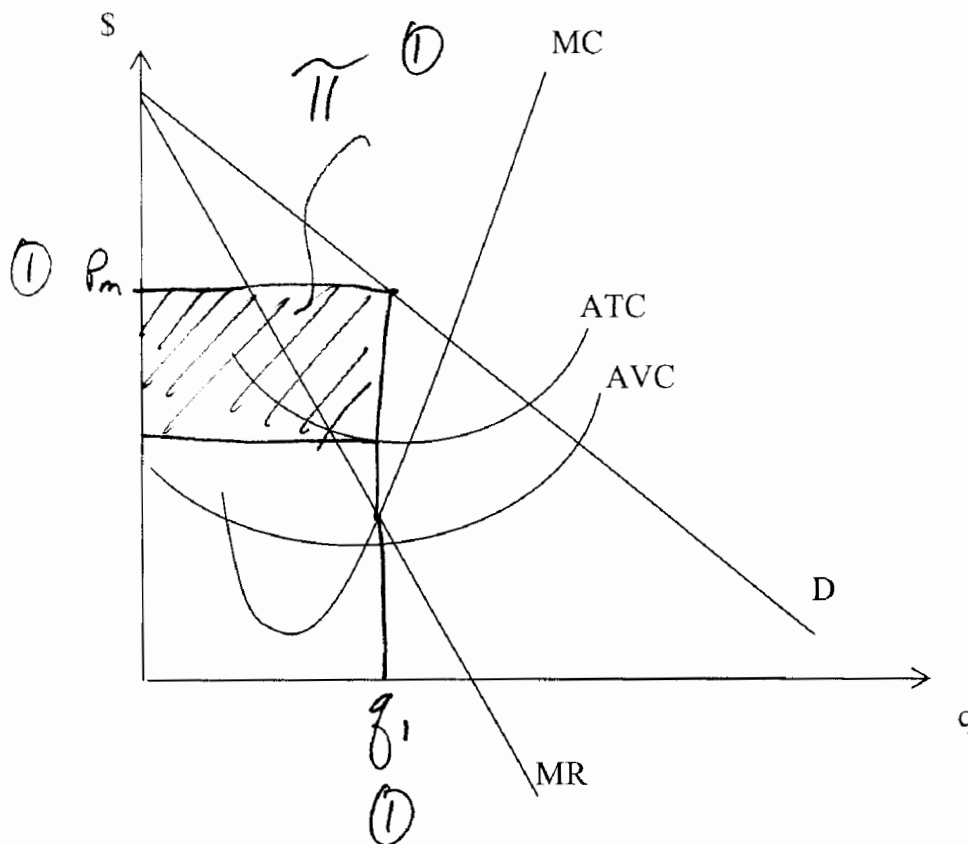
2-points b) What are the two methods by which an individual or company may be granted a legal monopoly over their intellectual property?

- ① i) Patent
- ① ii) Copyright

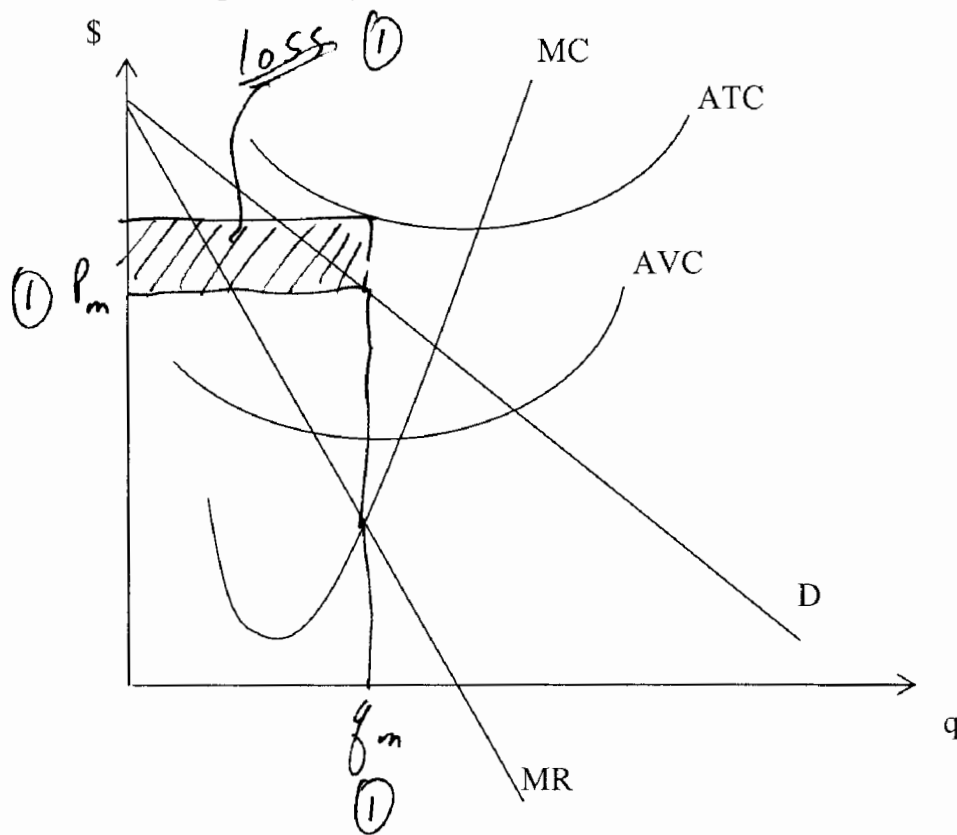
2-points c) What is the goal of a monopolist?

② Maximize Profits

3-points d) Indicate how much a monopolist will produce, the price they will charge, and the amount of profit they will receive in the short-run.



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3-points e) If a firm is able to price discriminate between different groups would they want to do so? Why or why not.

① Yes.

② - Can charge high demand groups a higher price than low demand groups

or

It gives the Firm another option to maximize π and this option to discriminate cannot make the monopolist worse off

→ either explanation 2 points

4) Firms Behavior and Decisions

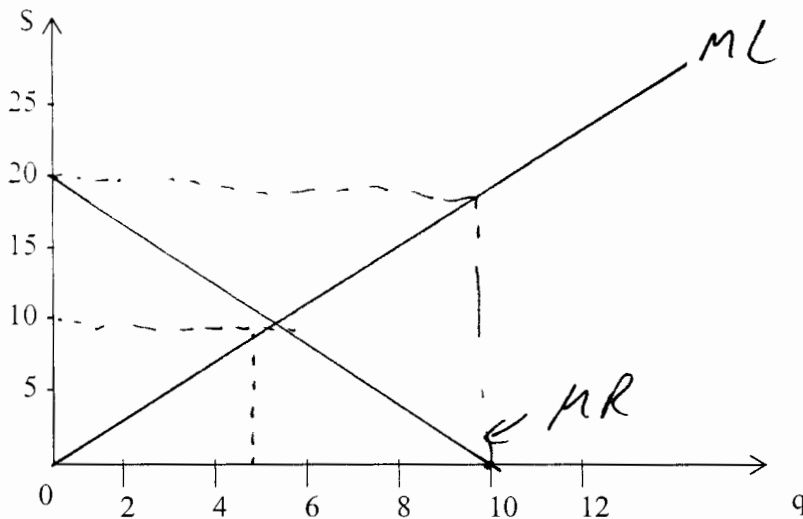
3-points a) What are the two methods that may be used by firms to maximize profits? Which method will give the "correct" answer?

- ① 1) $MR = MC$ approach
- ① 2) TR and TC approach
- Both give correct result
- ↳ Maximized difference between TR and TC if $TR > TC$
- ↳ Minimize difference if $TR < TC$ (and covering all variable costs)

b) The following is some information for a particular firm:

- total revenue function is given by: $TR = [20 - q] \cdot q$
- total cost function is given by: $TC = q^2 + 55$
- marginal revenue function is given by: $MR = 20 - 2 \cdot q$
- marginal cost function is given by: $MC = 2 \cdot q$

3-points i) Graph the marginal revenue and marginal cost curves.



2-points ii) Derive the firms profit function.

① $\rightarrow \pi = TR - TC$

$\rightarrow \pi = [20 - q] \cdot q - [q^2 + 55]$

① $\rightarrow \pi = [20 - q] \cdot q - q^2 - 55$

or \rightarrow

3-points iii) What is the profit maximizing level of output in the short-run?

$$\textcircled{2} MR = MC$$
$$20 - 2q = 2q \quad \Rightarrow \quad 20 = 4q$$
$$\Rightarrow q^* = 5 \quad \textcircled{1}$$

4-points iii) Does this firm have any fixed costs? If so how large are they? What is the rule that the firm should follow to determine if it should produce output in the long-run? Should this firm produce in the long run?

$\textcircled{1}$ Yes. Fixed cost = 55

\hookrightarrow Recall $TC = \underbrace{q^2}_{TVC} + \underbrace{55}_{TFC}$ - The amount 55 does not change as q changes.

also: By definition, Fixed cost is the cost incurred when $q=0$

$$\text{i.e. } TC(\text{where } q=0) = q^2 + 55$$
$$= [q=0]^2 + 55 = 0^2 + 55$$

• Firm should produce in the LR if $\pi \geq 0$

~~Profit~~ Profit where $q=5$

$$\pi(q=5) = (20 - q) \cdot q - q^2 - 55$$
$$= [20 - 5] \cdot 5 - 5^2 - 55$$
$$= 15 \cdot 5 - 25 - 55$$
$$= 75 - 25 - 55$$

$$\textcircled{1} = -5$$

since $\pi = -5 < 0$

$\textcircled{1}$ This firm should not produce in the LR.