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PRØVE

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Section 1

Oppgave	Tittel	Oppgavetype
ℹ	Coverpage	Informasjon eller ressurser
1	Questionnaire	Langsvar

1 Questionnaire

Fill in your answer here

Section A)

1)

We are considering a game with two firms A and B. They are deciding wheter to charge a high or low price on theire products. The two products are similar but not perfect substitutes for conumers. If two goods are perfect substitutes for a consumer, it means that the consumer si indifferent between the two goods, since they cover the same needs of the consumer. Therfore the consumer will choose the good with the lowest price. An example of goods that can be substitutes are different types of sodas: 7up and sprite for instance.

When two goods are substitutes, an increase in the price for one good(ex good B) will lead to an increased demand for the other good(ex good A) beacuse it has become relativley cheaper.

However in this game the goods are similar but nor perfect substitutes, so some conumers may prefer the one over the other, but we cannot know this without further information about conumers preferences. Since the goods are similar the two firms has to take the other firms pricing into account. Thus the firm has to act the best way they can, taking into account what another firm is doing.

In this matrix we have a duoåoly, a market consisting of two firms that are competing against each other to get the amrket demand.

I have drawn the matrix of the two firms in matrix 1.

To figure out how firm A's strategy is we see how they best repsonse to firm B's action:

- If firm B sets low price: Firm A best response will be to set high price beacuse 300>0.
- If firm B sets high price: Firm A best response will be to set low price since 150>50

We see that firm A does not have a domminant strategy. It depends on what firm B does, and respons the best way it can to firm B's decision.

Frim B's strategy:

- If firm A sets low prise: firm b best repsonse will be to set high price beacuse 400>150
- if firm A sets high proce: frim B best repsonse willl be to set low price beacuse 150>50

We see that firm B dos not have a dominant strategy either, and its response will depend on what frim A does.

Since noene of the frims has a domminant strategi, we do not get a domminant strategy equlibrium. However we do get two nash equlibrims. In a nash equilibrium the two firms are doing the best they can, given the actions of the other firm. The two nash equilibrium yields following payoffs: (400, 150) and (150, 300). So firm A will either get a pay off of 300 or 150, and firm B will either get a pay off of 150 or 400.

Firm B gets a much higher pay off if they offer a high price and firm A offers a low price and vice versa. Both firms will want to offer the high price. In order to make a credible therath they would have to change the matric, by for instance having a larger production. In this matrix however, none of the firms can make a credible threat.

2)

We now have different profits in the matrix. I have drawn the matrix in Matrix 2. The firms make thoir choices simantanosly(this is a bertrand model, where the firms make the decision simananosy, and base it on what they think is the best repsonse to the other firm).

Firstly we find the firms strategies:

Firm A

- if firm b sets low price: best response is low price150 beacuse 150>50
- if firm b sets high price: best response is low price

firm A has a dominant strategy. No matter what firm B does, the best decison is for firm A to set a low price, because this yields them the highest pay off.

firm B

- if firm A sets low price: best response is to set low price beacuse 150>50
- if firm A sets hgh price: best response is to set low price because 400>300

Firm B also has a dominant strategy and will set low price, no amtter waht frim A is doing.

Therfore we will get a domminat strategies equilibrium that yields the following payoffs(150, 150) wich is also a nash equlibrium. However this equlibirum does not maximize the profits of both firms.If both firms were to set a high price, they would both get a higher profit(300 300). This would lead to higher profits than in the equilibrium for both firms. However, they have to set their prces simultaneously and since both firms would have motivation for setting a low price if the other sets a high price(so they get an even bigger profit) the firms do not trust eachother and will not set a high price. This is an example of the prisoners dilemma. It would be better fro both firms to set hogh price, but they both have incentives to set a low price wich will gicve the other firm a remakably lower payoff. Therfore both firms will set a low price in the nash equilibrium.

With collusion, such as written contracts the firms could collude and agree to set a high price. However collusion is illegal because it minimizes competition in the market, in norway we have antitrust laws to prevent this.

Section B)

We are now considering an entertainment park(Park A). We have gotten a pice list where we see there are two different prices for adults and children, and there are diff rent prices onn weekdays and weekends. We can see different uses of price discrimination Park A has used. The general aim of price dsicrimination is to give the firm(park A) a higher profit by getting more of the conumers surplus, and in (extreme) cases the firm takes all the consumers surplus.

The park does not use first degree price discrimination wich is pricing all the diffrent consumers their exact reservation price. This is in relaity very difficult to over see and ecipsially in and entertaimnent park with a lot of differnt consmers. with first degre pricediscrimiantion the producer captures all the consumer surplus

second degree price discrimination is when th eproducer gices differnt prices with differn t \t bulkd, so thy use "bulk-pricing". However this is not the case for Park A, beacuse we do not ahve any infromartion if group of several people(for example group of 10) will get a discounted price. If this were to be the case the porucer would get more of the consumer surplus. However, form the infromation we have the firm(park A) does not do second degree price discrimination.

However we can observe some other pricediscrimination and pricing strategies:

Firstly we can observe third degree price discrimination: The firm sets differnt prices based on differnet consumer groups. Consumer groups can be absed on for example be age(child, adult, senior) or occupation(student, worker). In this case they have parted the consumer in two groups, a diffrent price for adults and a diffrent price for children. Adults havs more income and are able to pay a higher price. While parents has to pay for their children, setting a high price for them could lead to for example a family finding it to exspensive to visit the park.

Secondly we can observe intertemporal price discrimination. This is when firms increases their prices in period of high demand. It can also be time based, so consumers that want a good now buys it for a higher price and conusmers that are willing to wait buy it later. This way the firm captures two diffrent consumer grups with different willingess to pay. An example of this can be a new smartphone frm apple, it has a high price when it is first on the market, and the price delines after a period for example a yar later the price is likely lower. For the entertainment park there is likley higher demand in the wekends(since adults likely do not have to work, and children are out of school). We could argue that this is intertemporal price discrimination. However ithe park could argur that the higher prices on weekend could be due to "peak load pricing". Peak load pricing is a concept of the firm faacing higher marginal costs in periods of higher demand. The firm has to set higher prices(higher mark ups) to cover the increased cost of production in periods of high demand. The increased costs can be due to workers having to be paid over time, or get a bonus for working on weekends. We do not know if the park has intertmeporal price discriination or has peak load pricing due to for example needing more staff and paying bonus for workers hving to work weekends.

Lastly the enternainment park likley also uses two-part-tarriff pricing. This is when the consumers has to pay a entry fee to get into the park, and then a usage fee. The usage fee could be skipping the line for rollar coasters, buying food in the park, or maybe even doing rides. However we do not know this for sure, but we assume it is possible to consume diffrent goods and services in the park. With two part tariff pricing, it is possible for the producer (park A) to get all the consumer surplus, though in relaity it is unlikley that the producer manages to take all the consumer surplus. I have drawn two part tariff pricing in graph 1 where the producer manges to capture al the conumer surplus. P* equals the usage fee, wich stays the same for all quantites consumed, therfore P* is linear and does not increase. The area over P* and under the graph equals the entry fee.

Section C)

1.

An externality is when the production or consumption of a good affects a third party that does not directly linked to the conumption or production of the good or service. The cost of this effect is not included in the market price(in a competetive market whithoout ny intervention). Externalities can be both postive or negative. A postive externalitiy creates benefits for other, for example research and development can create new technologies that over time other firms can use(depends on if it is patendted and for how long. Negative externaliteies however effects the third party negatively, and the cost of the externality is not considerd in the market price. A neagtive eternality can for example be noice from the motor way, waste water in river form production or CO2 emissions from production.

For a postive externality the market price will be to high and the quantity produced of the good will be too low. While a negative externality in a competiive market will have a too low price and a too high produced quantity in the market.

in a competetive market we have the following points: it needs to be many conumers and many producers and consumers, a homogenous good, full avilable information about prices, no entry/exit barriers and no market failure(such as externalites or market power).

Externalities lead to market failure beacuse the real price of production and(or consumption is not reflected in the market price. I have illustrated this in graph 2. The competitive market gives a too low price and a too high quantity produced(Q1, P2) compared to the marginal social cost of the externality(MSC). In this market with amrket failure, we need public intervention to get the market to consider the cost of the externality. To get the optimal equlibirum we find the crosisngpoint/intersection between the MSC-curve and the demand curve. Therefor we get the quantitu Q2 , andthe price P2. We now have an equilibrium with a higher price and a lower quantity, this is the optimal for a market with a negative externality.

2.

Negative externalities can be corrected for in a competitive market by public intervention. The state can for example set taxes or quantity standards on output. However this can be challenging, the state must set the tax so that is matches with the marginal social cost of the externality. It is challenging to calculate how much for example air pollution is costing society. Standard on quantities can be easier to control, however this does not leads to a efficiency loss since it restrict the market mechanism.

The governemeent could create a scheme of tradable emissions permits. This can be an effective way to get firms with high levels of pollutions to lower their level of emissions.

The cost of reducing emissions is called abetment cost. I have illustrated the abetment costs and the marginal cost of production of a firm in figure 3.

The marginal abetment cost(MCA) gives the cost of reducing emissions with one extra unit. As we see in figure 3 the MCA curve is high and then gets lower to the right. We have to reed the curve from right to left. When the levels of emissions are high, the marginal abetment cost will be low. This is because at high emission levels it will be less costly to reduce emissions. While at lower levels of emissions(further to the left in the diagram) the firm probably needs more expensive technology to be able to reduce emissions more. Therefore the marginal abetment cost is low for high levels of emissions, and high MCA for low levels of emissions. MC represents the firms marginal cost of production.

The equilibrium will be where the marginal costs of productions intersects with the marginal cost of abetment. At his point, the cost of increasing production equals th cost of reducing one more unit of emissions.

If E>E*, such as un point E'' in graph 3, the marginal cost of production is higher than the abetment cost. The firm will loose on increasing the production(and level of emissions) and should therefore reduce it emissions level(and production) until E=E*-

If E<E*, such as in point E' in graph 3 the cost of reducing one extra unit of emission(MCA) is higher than the marginal cost of production, therefore the firm should increase it s emission until E=E*.

If the government choose to create a scheme of tradable emission permits the firms with the lowest abetment costs will reduce their level of emissions, and sell some of thier emission permits. While firms with high abetment costs rather will but emission permits on the market - because this is the most cost efficient for them since reducing levels of emission is expensive. This way the firms who easiest can reduce their level of emission will, and for those firms it is hard for will not. At the same time the permits sum will equal a emission standard for the whole market, so the government can reduce emissions, while the market self regulates to the tradable emission permits. This way there will not be a deadweight loss such as it would be with the same emission standard on every firm.

It is worth noting that when considering pollution and emissions it can be hard for the government to measure and oversee the quantity of pollution and emissions every single firm aggregates. So firms could cheat with numbers and actually have higher emissions than they lead on if the governe,t cannot oovesee all firms emissions.

Section D)

1.

We suppose the market demand for mountain spring water is P=120 - Q. P is the price and Q is the quantity. The marginal cost is MC = 60 and the marginal revenue is MR = 120 - 2Q.

a) For a perfectly competetive market we can find the level fo output and price in the long run by setting MC=P. This is beacuse the cost minimizing quantity is given by MR=MC, but in a competitive market the individual firms sees the price as given by the market, so as i have

isslutrateed in figure 4 the demand curve for a single firm in a competitive market will be equal the price so P=MR. Therefore the equilibrium in the competeitve market is set by MC=MR=P so MC=P.

On line 1 i have set mc=p and substituted Pc=60 in the demand function P and got Qc=60. So the equlibrium in the competetive market is (60, 60).

b) A firm is a pure monopoly if it is the only producer of a good in a market. Therefore they have market power can set the price higher than the marginal cost, in contrast to the competitive market where there are many producers and the has to set MC=P. A monopolist will ifnd it profit maximizing output and price y setting the quantity to where MC=MR. I have written this on line 2 on page 5. I have explained the steps on paper and we get Qm= 30 and Pm=90. We see that if the industry were a pure monopoly the output would be smaller and the price higher compered to the competitive equilibrium.

I ahve also shown this graphically in figure 6. The monopolist firm sets quantity to where MR=MC, since they have market power they can increase their price until P=MWP(the consumers willingness to pay). I have aslo illustrated teh competitive equilibrium alone in figure 5 on page 4, and in the monopolist industry digaram on page 5. The output is lower and price is higher in the monopolist industry, wich is not socially optmal. Here is an efficiency loss in the market wich is the grey area, "the dead wight loss". This illsutrates that the monopoly industry is not socially optimal. However in the competitive market the social surplus is maximized, and the equilibrium is therefore optimal for the economy.

2. The answer is point c, monopoly.

3. The asnwer is d) proftis are zero in the long run

4. Answer is d) profit is higher and output is lower in Nash equilibrium

Ord: 2968

Knytte håndtegninger til denne oppgaven?
Bruk følgende kode:

4 6 4 7 5 8 5

Håndtegning 1 av 5

Fill out Question Code and Test Information on every sheet. Fyll inn oppgavekode og emneinformasjon på alle skisseark.

Question Code Oppgavekode	Date Dato	Subject code Emnekode	Candidate ID KandidatID	Question no Oppgavenr	Page number Sidetall	Number of pages Antall ark
4647585	23.05	SØK1024	10002	A(1)	1	5

Writing area Skriveområde

Matrix 1

Firm B \ Firm A	Low price	High price
Low Price	150, 0	150, 300
High Price	400, 150	50, 50

Nash equilibrium: (400, 150) and (150, 300)

Matrix 2

Firm B \ Firm A	Low Price	High price
Low price	150, 150	400, 50
High price	50, 400	300, 300

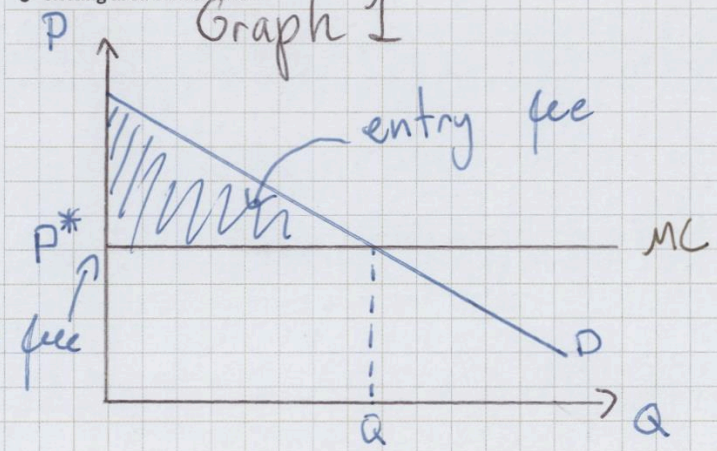
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Håndtegning 2 av 5

Fill out Question Code and Test Information on every sheet. Fyll inn oppgavekode og emneinformasjon på alle skisseark.

Question Code Oppgavekode	Date Dato	Subject code Emnekode	Candidate ID KandidatID	Question no Oppgavenr	Page number Sidetall	Number of pages Antall ark
4647585	23.05	SØK 1024	10002	B(2)	2	5

Writing area Skriveområde



P* = usage fee

Form Number: INSPERA-02-160919-1 Provider: CADA Sistemas Informáticos www.cada.es

Håndtegning 3 av 5

Fill out Question Code and Test Information on every sheet. Fyll inn oppgavekode og emneinformasjon på alle skisseark.

Question Code Oppgavekode	Date Dato	Subject code Emnekode	Candidate ID KandidatID	Question no Oppgavenr	Page number Sidetall	Number of pages Antall ark
4647585	2305	SØK1024	10002	C(3)	3	5

Writing area Skriveområde

Figure 2

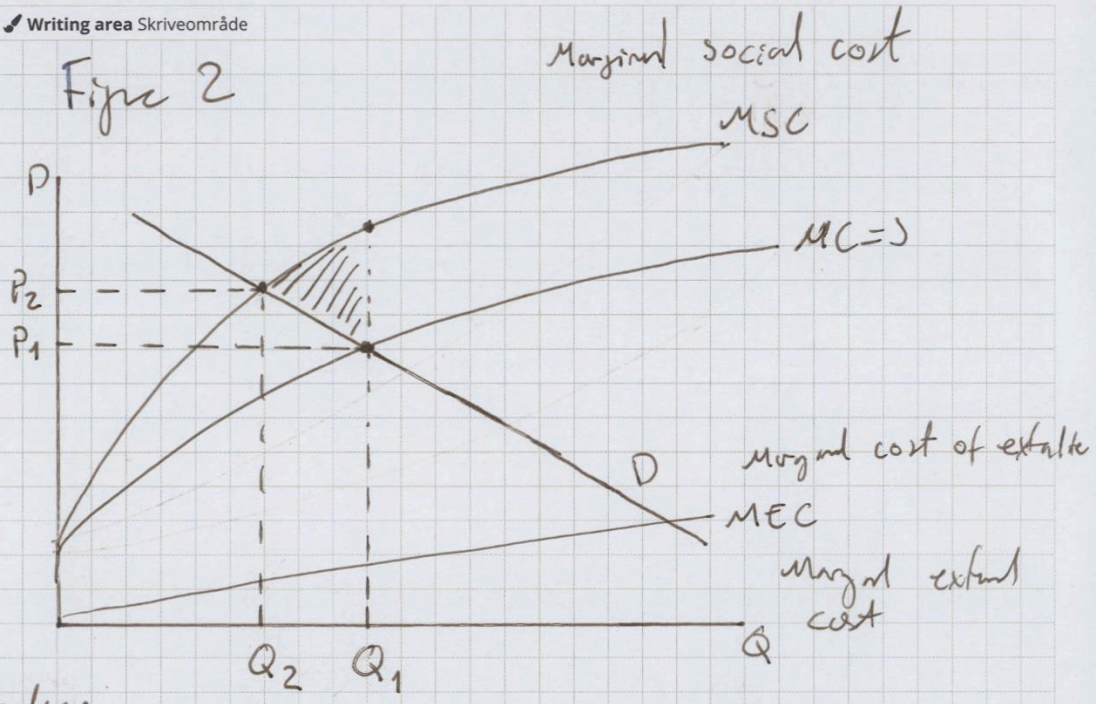
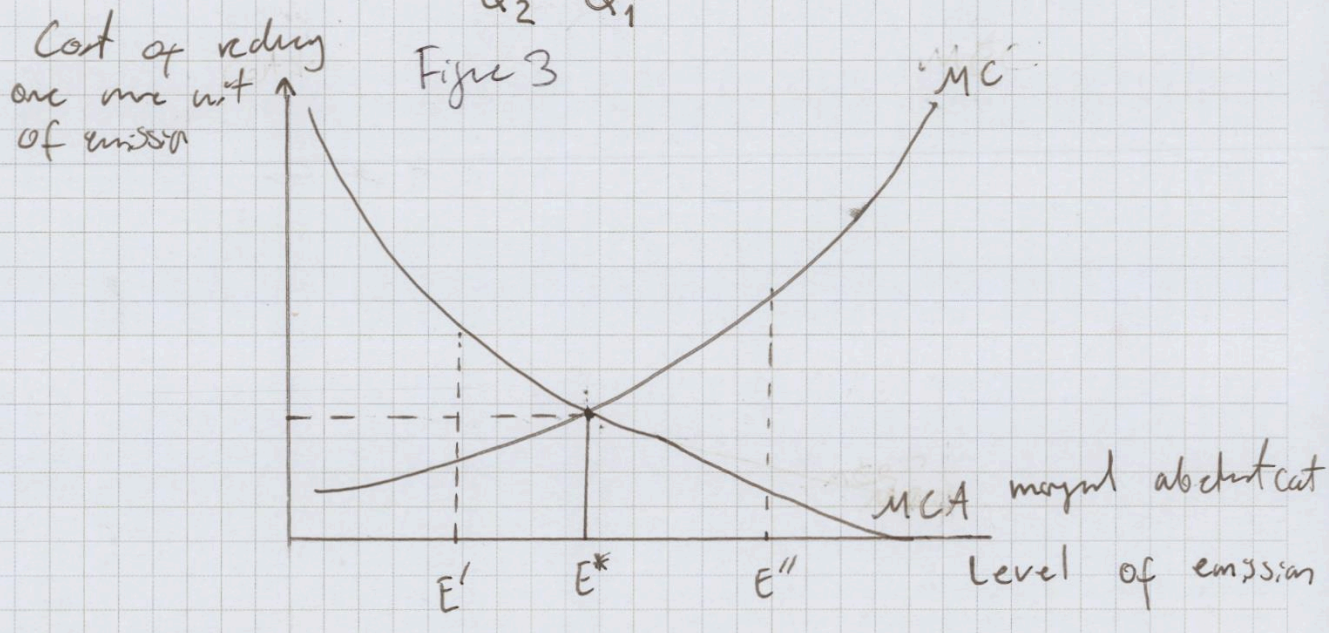


Figure 3



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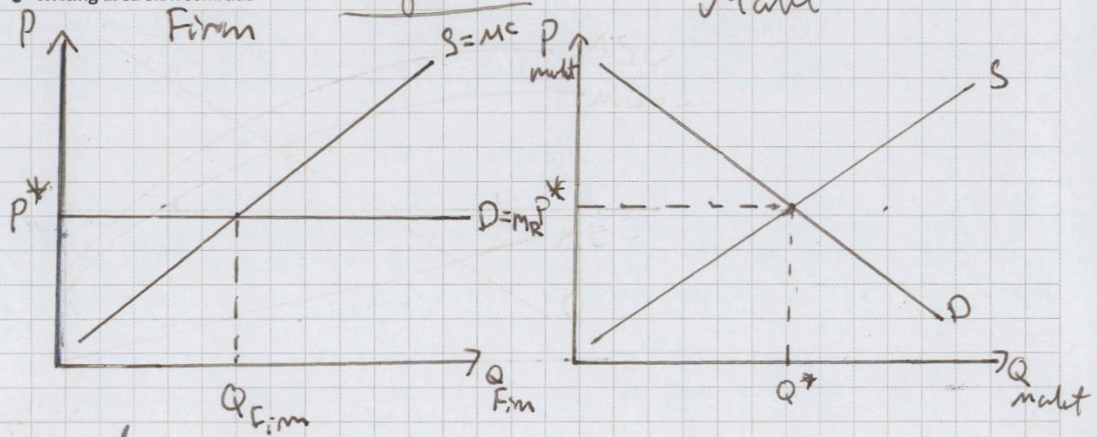
Håndtegning 4 av 5

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Question Code Oppgavekode	Date Dato	Subject code Emnekode	Candidate ID KandidatID	Question no Oppgavenr	Page number Sidetall	Number of pages Antall ark
464285	23.05	SØK1024	10002	D(4)	4	5

Writing area Skriveområde

Figure 4



Market demand $P = 120 - Q$

$MC = 60$

$MR = 120 - 2Q$

Line 1: $P = MC$

$P^c = 60$

Substitute P^c in demand function: $P = 120 - Q$

$60 = 120 - Q$

$Q = 120 - 60$

$Q^c = 60$

Equilibrium in competitive market: $(Q^c; P^c) = (60, 60)$

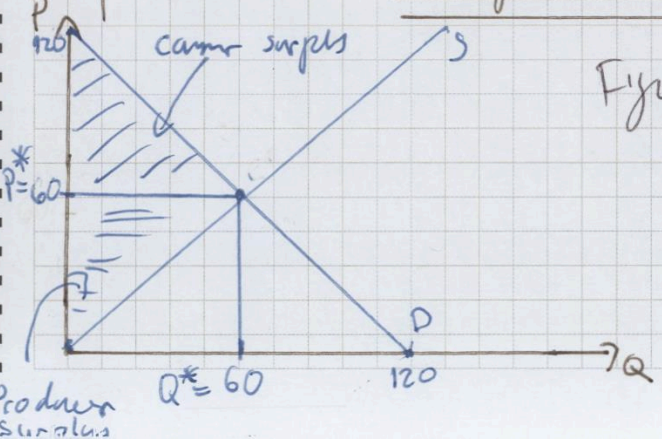


Figure 5

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Håndtegning 5 av 5

Fill out Question Code and Test Information on every sheet. Fyll inn oppgavekode og emneinformasjon på alle skisseark.

Question Code Oppgavekode	Date Dato	Subject code Emnekode	Candidate ID KandidatID	Question no Oppgavenr	Page number Sidetall	Number of pages Antall ark
4647585	28.05	SØK1024	10002	D(4)	5	5

Writing area Skriveområde

D) 1 b) Profit max when price monopoly

Line 2: $MR = MC$

$120 - 2Q = 60$

Solve for Q: $2Q = 120 - 60$

$Q^M = 30$

Gets the price by substituting Q^M in the demand function

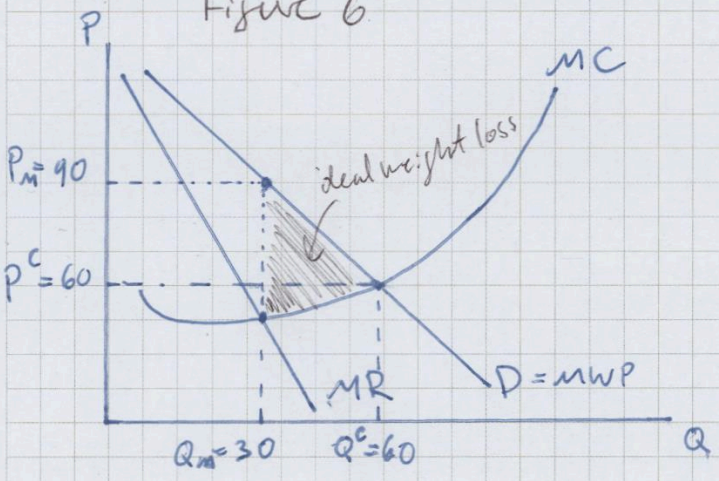
$P = 120 - Q$

$P = 120 - 30$

$P^M = 90$

Monopolist equilibrium $(Q^M, P^M) = (30, 90)$

Figure 6



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