EE340 Solution Guide

Note that the answers I uploaded here are just AN EXAMPLE. The essay part is quite subjective so if you give a good structure of analysis and convincing reason to support your argument, it is correct anyway.

Assignment 2 You only need to sum the demand functions vertically to calculate the demand function of public goods. (See the solution sheet)

Assignment 3
Question 1 To identify whether goods/services are public goods or not, you need specify whether it is nonrival and nonexcludable. If so (or not), just give reason why it is (not) nonrival/nonexcludable.

Question 2 You should specify how television technology should from public goods (nonrival and nonexcludable – in the sense that it is free provided and one additional consumption does not disturb others' consumption) to private goods (rival and excludable – e.g. now you have to pay in order to watch a specific programme and when there are more people watching the programme, the signal gets worse, etc.)

Question 3 First, you have to come up with demand function of public goods by vertical summation. (See the solution sheet)

Question 4
a) You need to calculate the demand function of public goods then equate with the marginal cost. (See the solution sheet)

b) You need to identify WHY public goods is not supplied when there is free rider problem. Basically, when there is public goods provided, anyone can consume it. So, if one pays for construction of public goods, the others can come to consume as it is nonexcludable and nonrival. This is called a free rider problem as the ones who do not pay can consume the goods. Hence, no one is willing to pay for the construction of the goods. He/she can just wait for someone paying for it and be a free rider. In the end, no one pays for it and no public goods is constructed.

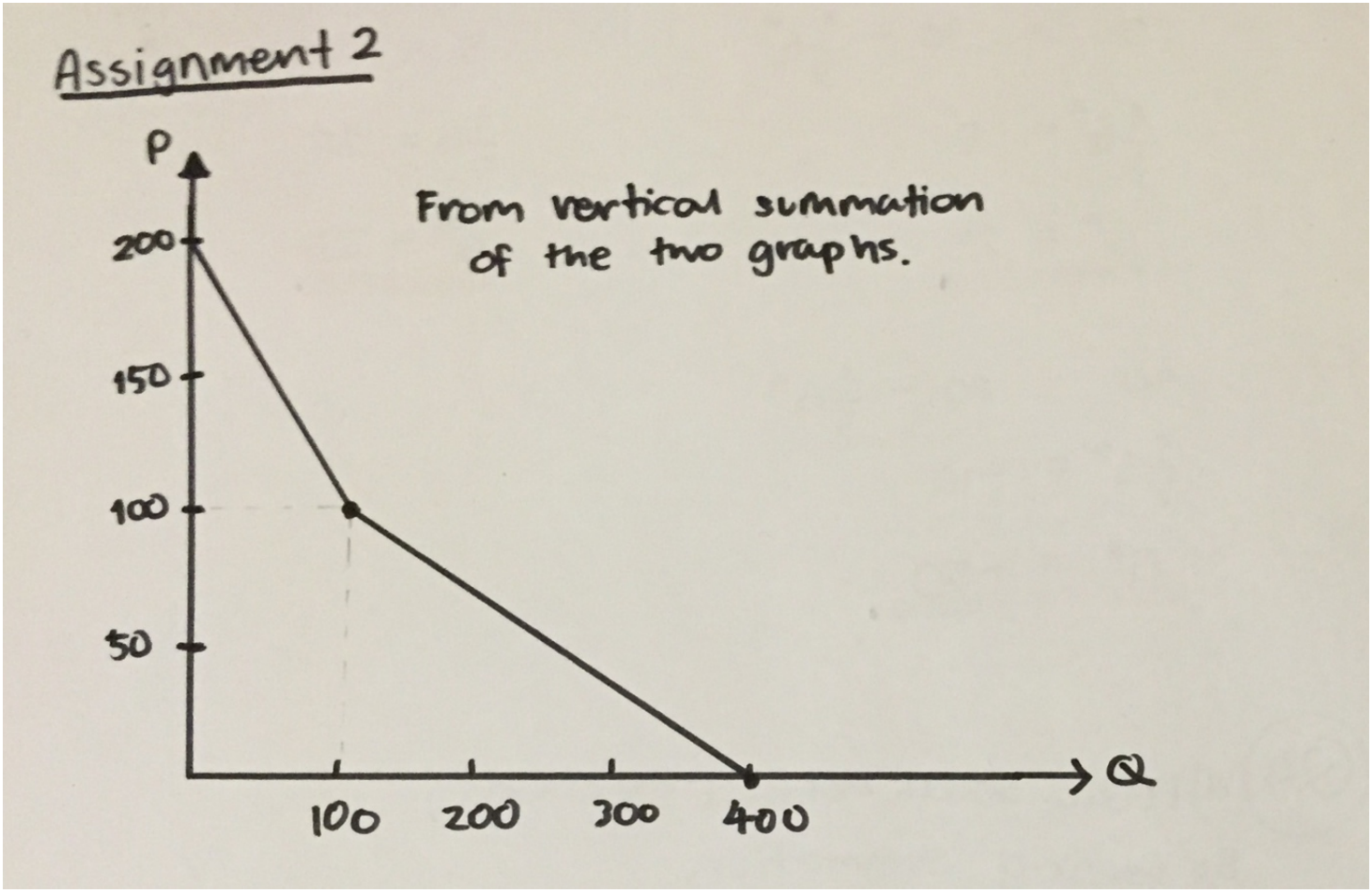
c) Deadweight loss occurs when marginal benefit is not equal to marginal cost. Since you have to calculate when there is NO PUBLIC GOODS supplied, you have to calculate from MB(G=0). (See the solution sheet)

**Note: I deducted 2 from those who did not do this question but I just realised it was a challenge question. So, I will add 2 points to your score (then it becomes 42 in total). Those who tried to do this question and got some parts of the concept correctly received, for example, -1.5 from me, meaning that you will get 0.5 in the end.

If you have any questions/concerns, please feel free to come and ask me ☺

Puthita (Taw)

Assignment 2



Assignment 3
Question 1

(2) a) A bicycle race around France during the summer

• A bicycle race around France during the summer are a pure public good because it is non-rival in consumption because every one can entrace to the bicycle race and everyone can't block each other to came. It is also non-excludable, since we donot need to pay for entrace the race and setting the same level of utility.

(2) b) Cable television programs Non-rival, Excludable

• Cable television programs is a price-excludable public good because cable tevelvision is non-rival in consumption. Everyone who got the Cable box can reciere the cable television sishal which mean that everyone who got a cable box can watch the cable television. Cable television are also excludable since we have to pay monthly payment to set the sishal. If we do not pay, the company who own the sishal will prevent us to watching the cable television by blocking the signal.

c) Radio programs

• Radio programs is a pure public good because radio program are non-rival in consumption and non-excludable. For the non-rival in consumption, as same as the cable television, Everyone who got the radio can listen to the radio programs and can block the other to listen the same program. For the non-excludable, we donot need to pay in order to listen the raidio or it mean that we can listen it for free.

(2) d) Public Schools

• Public schools is price-excludable public good because public school are non-rival in consumption which mean that everyone can enter to study in the school, everyone cannot block each other to entrance. and the public school also a excludable because we need to pay amount of money to order to study in the school.

(2) ✓ d) Public Schools

• Public schools is price-excludable public good because public school are non-rival in consumption which mean that everyone can enter to study in the school, everyone cannot block each other to entrance. and the public school also a excludable because we need to pay amount of money ~~to~~ order to study in the school.

(2) ✓ e) Scientific discovery

• Scientific discovery is a pure public good because scientific discovery are non-rival in consumption because every one can enter to scientific discovery and they ~~can~~ cannot block each other to enter the discovery. The scientific discovery are non-excludable because every one can use or consume the scientific discovery for free by donot have to pay any money as long as everyone getting the same utility levels.

Your analysis is just excellent!
keep up your good works :)

2

1) Which of the following are public goods? Explain why? Also, discuss their features with respect to the properties of rivalry and excludability?

a) A bicycle race around France during the summer.

- A bicycle race is contestible ~~good~~ public good since there is a rivalness in consumption which make them not a pure public good. It is rivalness because as it is called 'race' mean that people will have to compete with each other. It is also nonexcludability because no one can prevent other to race their bicycle.

Cable television programs

- Cable television programs is a price-excludable public good, because they are Nonrivalness and excludable. It is non rival because ~~one~~ the utility of MR.A does not affected by the arrival of others. It is excludable since the company can prevent customer to enjoy the benefit of their good by make them pay the fees.

c) Radio programs

- Radio programs is pure public good, it is both nonrivalness and nonexcludability. It's nonrivalness because the utility of the one who currently consuming the good does not decrease as other join them. It is nonexcludability because no one can prevent other to consume this good.

d) Public schools

- Public schools is contestible ~~goo~~ public good because it is rivalness and non-excludability. The reason it is rivalness is because as more and more people attend to the school to ~~the~~ some point will make others utility goes down. It is nonexcludability because no one and prevent other to attend to school.

d) Public schools

- Public schools is contestible ~~goo~~ public good because it is rivalness and non-excludability. The reason it is rivalness is because as more and more people attend to the school to ~~the~~ some point will make others utility goes down. It is nonexcludability because no one and prevent other to attend to school.

e) Scientific discovery

- Scientific discovery is a pure public good because it is nonrivalness and nonexcludability. It is nonrivalness because no one can reduce others utility as they consume the discovery. It is nonexcludability because no one can prevent other to enjoy the benefit of the scientific discovery.

Question 2

/10

2) Discuss how television technology can turn public good to private good.

In the past, television programs are pure public good as every one can watch without having to pay and doesn't affect others, so it is both non-excludable and non-rivalry. However, this pure public good has turned into private good like cable TV that viewers have to pay monthly fee in order to watch, so it is now excludable, but is still non-rivalry.

Excellent!!
The best one so far! :)

2) Discuss how television technology can turn public goods into private goods.

In the past	Current
no internet TV	TV equip with internet
Therefore, an ordinary TV that every one can use although it could be price excludable public as you need purchase the TV. But no one utility will decrease when others can watch TV. Everyone can enjoy	Now with internet, it is no longer just an price excludable good but non-it is rivalry since conjested user can decrease the speed of the internet. Here ones utility decrease as there's more user can access to the technology.

Question 3

Assignment 3

(Q3) Public goods demand function:

By vertical summation,

$$P = P_1 + P_2$$

$$P = \left(10 - \frac{1}{10}G\right) + \left(20 - \frac{1}{10}G\right)$$

$$P = 30 - \frac{2}{10}G$$

$$\boxed{P = 30 - \frac{1}{5}G}$$

To find the optimal quantity of public goods,

$$MB = MC \Rightarrow P = MC$$

a)
$$25 = 30 - \frac{1}{5}G^*$$

$$\frac{1}{5}G^* = 5$$

$$G^* = 25$$

b)
$$5 = 30 - \frac{1}{5}G^*$$

$$\frac{1}{5}G^* = 25$$

$$G^* = 125$$

c)
$$40 = 30 - \frac{1}{5}G^*$$

$$\frac{1}{5}G^* = -10$$

$$G^* = -50$$

Question 4
a)

(Q4) a) Public goods demand function:

By vertical summation,

$$P = P_1 + P_2 + P_3$$

$$P = (50 - G) + (110 - G) + (150 - G)$$

$$\boxed{P = 310 - 3G}$$

To find the optimal level of public goods,

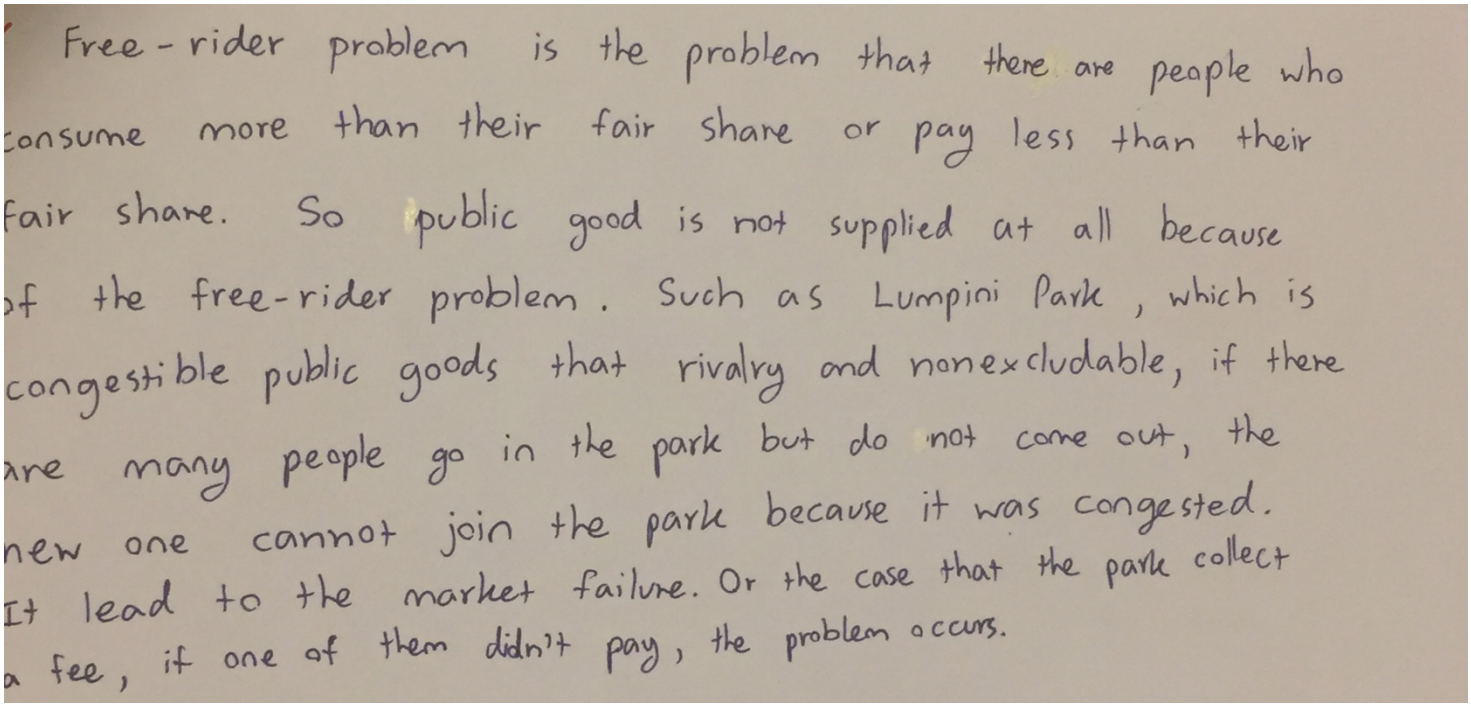
$$MB = MC \Rightarrow P = MC$$

$$190 = 310 - 3G^*$$

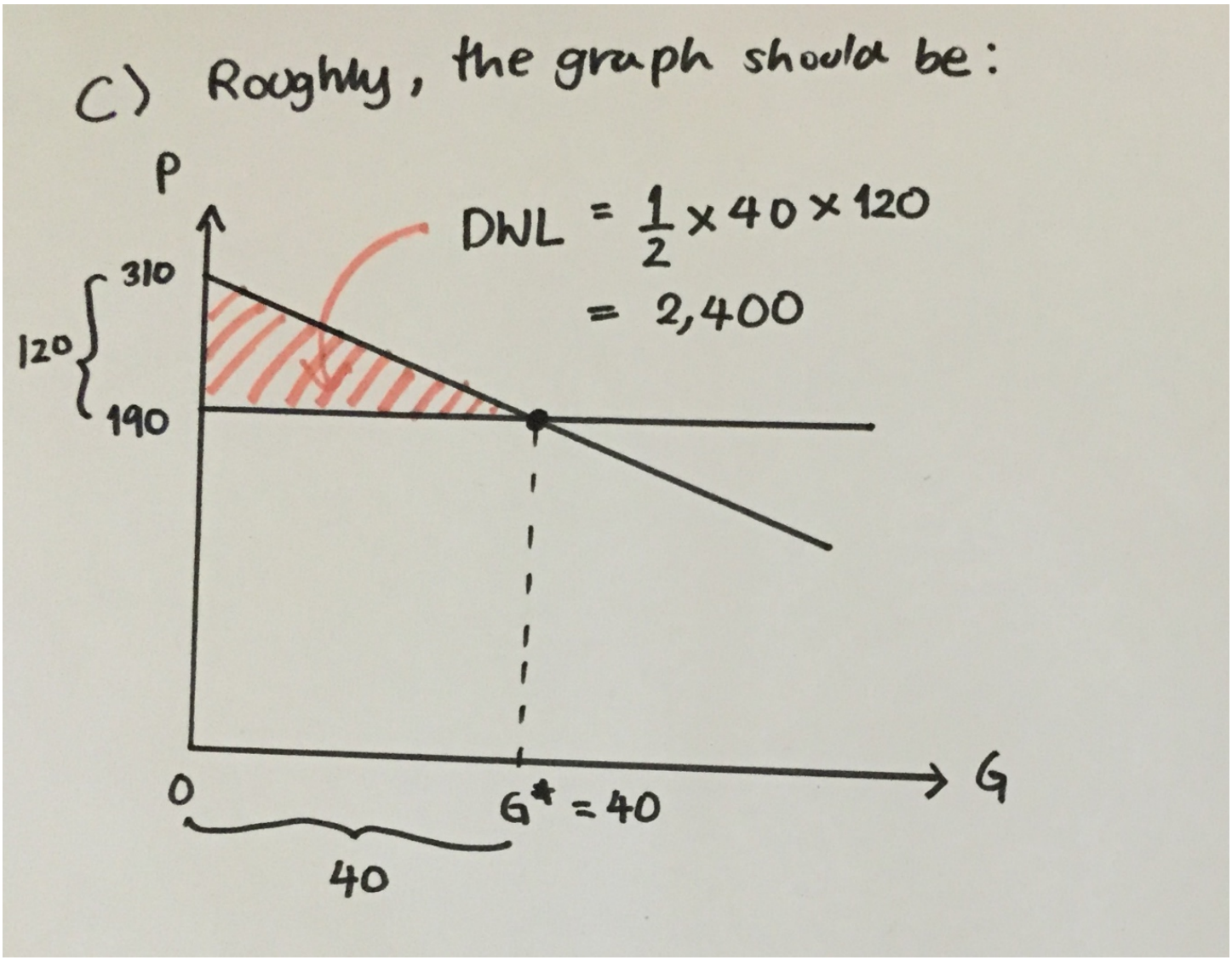
$$3G^* = 120$$

$$\underline{G^* = 40}$$

b)


Free-rider problem is the problem that there are people who consume more than their fair share or pay less than their fair share. So public good is not supplied at all because of the free-rider problem. Such as Lumpini Park, which is congestible public goods that rivalry and nonexcludable, if there are many people go in the park but do not come out, the new one cannot join the park because it was congested. It lead to the market failure. Or the case that the park collect a fee, if one of them didn't pay, the problem occurs.

c)


C) Roughly, the graph should be:
P
DWL = $\frac{1}{2}$ × 40 × 120
= 2,400
310
120
190
0
$Q^* = 40$
Q
40