Ch 17 (Tech Change) Review Questions: 5, 8, 12A, 13, 16

Problem 5

Explain how patents, copyrights, and trademarks may promote tech progress.
Why not give creative individuals and firms unlimited ownership of the outcomes of their work?

Answer:
The government wants to promote tech progress because, as the book states, 40-50% of US economic growth results from technological change.

Patents / copyrights / trademarks give the creator the rights to profit off of their invention.
If these rights were not in place, the potential profits may not make up for the cost from R&D.
Patents allow the creator to gain **market power** which will allow their revenue to overcome their R&D costs.

However, **market power** is allocatively inefficient. This is why we do not give firms unlimited ownership forever.

Problem 8

Coke has kept its recipe a secret for over 100 years.
Given that a patent lasts only 20 years, why don't all firms use the same strategy and keep their products a secret?

Answer:
The point of keeping a trade secret instead of filing a patent is that you don't have to share what you are actually patenting. The downside to this is that
1) someone could accidentally rediscover the "Coke recipe" on their own or
2) one of the people that knows the Coke recipe could start their own company.
In the case of Coke, only a few people know the recipe and these people are under contract to not share the recipe.

Other companies can't always do this if more than a few people need to know the special process to use.

Problem 12A

$P = 120 - Q$
$Q = Industry\ Quantity$

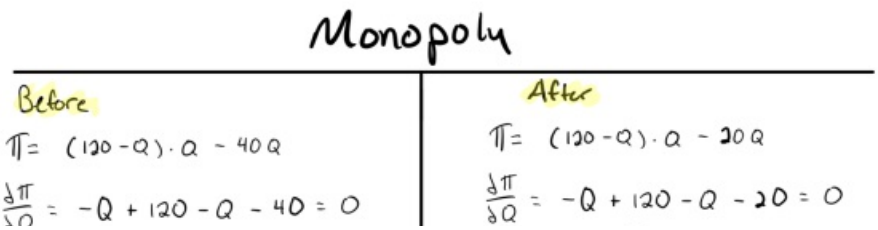
$Firm\ 1\ TC = c * q$

They can invest in R&D that will bring marginal cost from 40 to 20.

How much will they be willing to invest if they are in:
1) Monopoly
2) Bertrand duopoly
3) Cournot duopoly

Which structure will the firm have greatest incentive to invest in?

Answer:
Bertrand will have greatest incentive to invest.



$-2Q + 80 = 0$

$Q = 40$

$\pi = 1600$

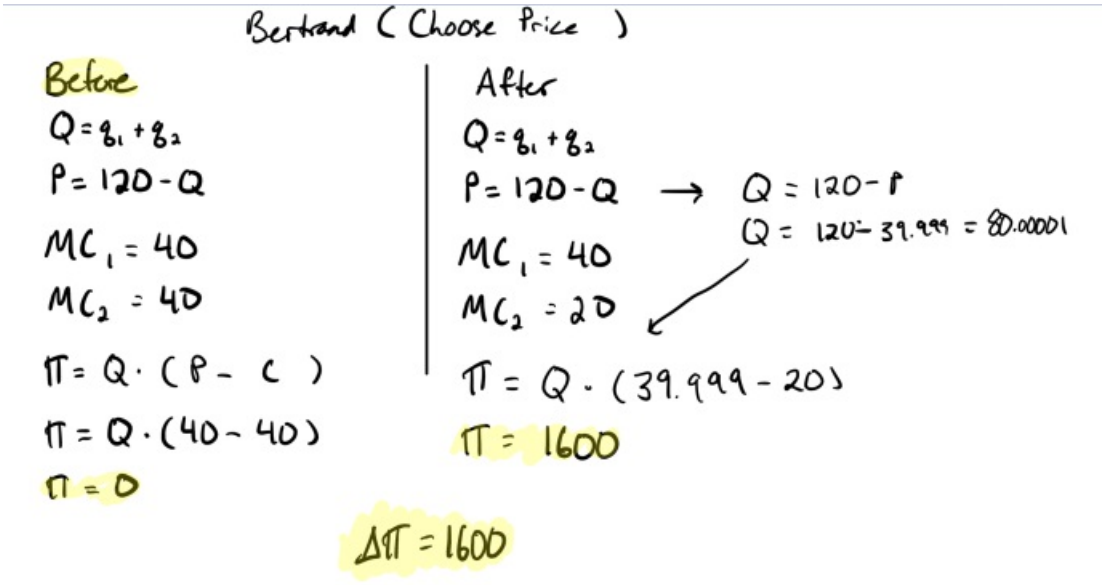
$-2Q + 100 = 0$

$Q = 50$

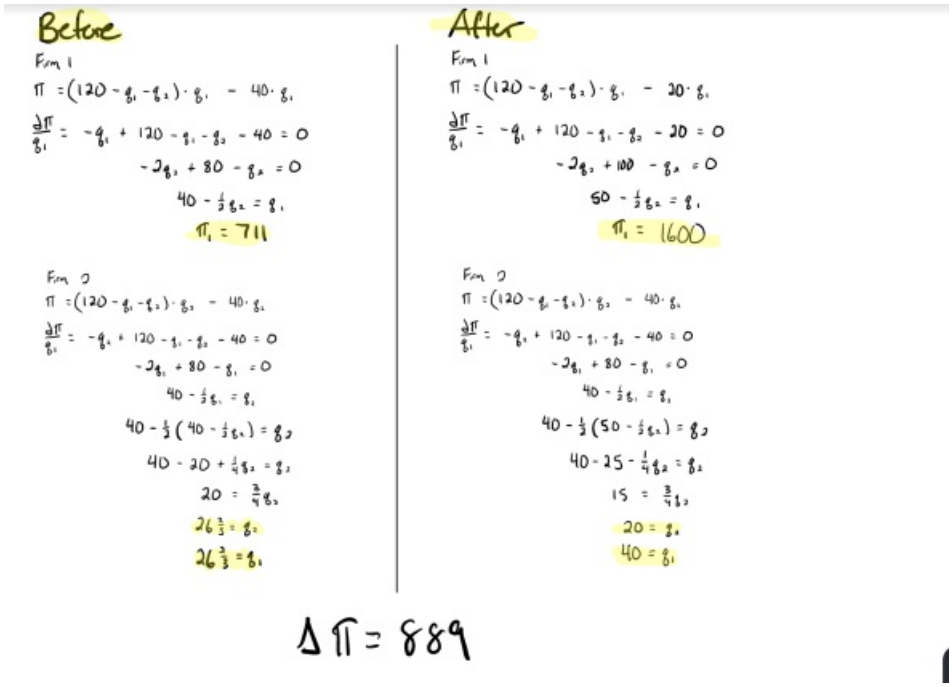
$\pi = 2500$

$\Delta\pi = 900$

Bertrand (Choose P)



Cournot (Choose Q)

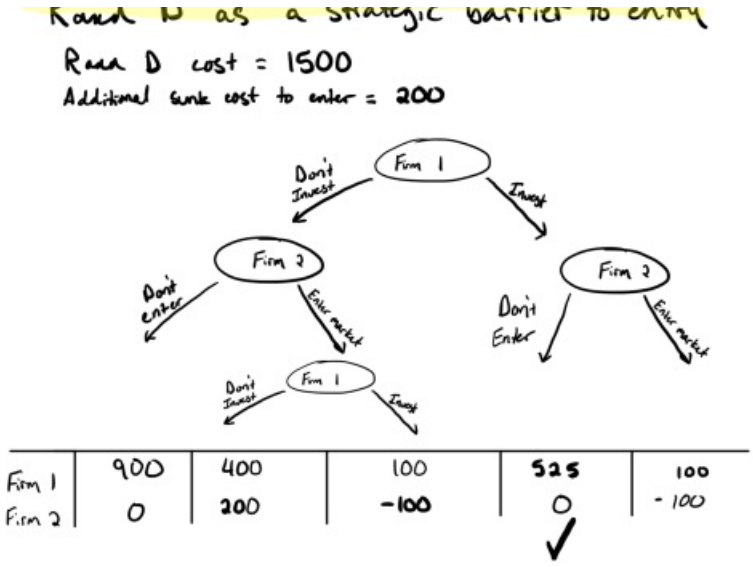


$\Delta\pi = 889$

Problem 13

How can the act of creating new technologies and obtaining patents serve as a strategic barrier to entry?

Answer:



This can occur if it raises the sunk cost of entry as shown above.

Problem 16

Will an overconfident MGMT team invest too much or too little in R&D from the firm's prospective?
From society's perspective?

Answer:
It depends. If the firm thinks that R&D will help out more than it actually will, they will invest too much.

Society would benefit if the extra gain from this investment is greater than the allocative inefficiency of paying a price greater than the MC (eg life saving drugs that cost a ton).