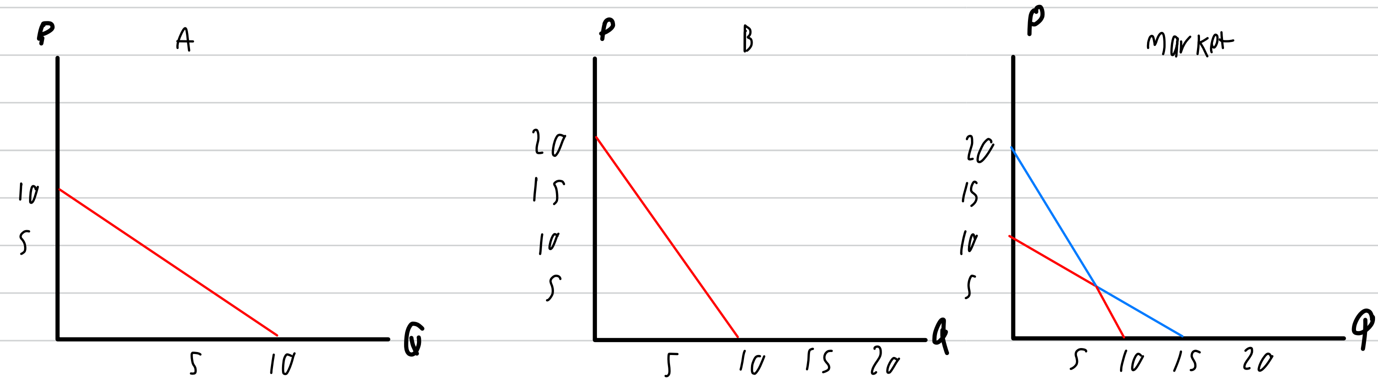
1] 2 consumers 1 seller

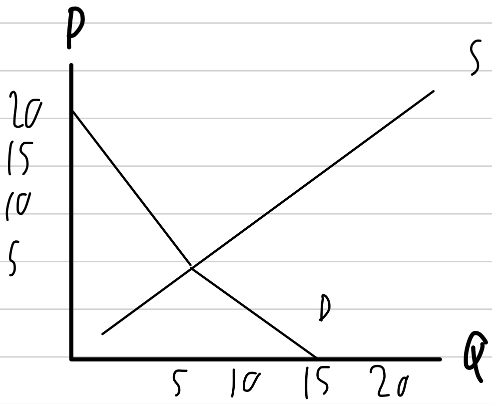
A : $Q_A = 10 - P \rightarrow P = 10 - Q$ $\quad Q = P$

B : $Q_B = 10 - \frac{1}{2}P \rightarrow P = 20 - 2Q$

1.1) draw individual demand and market demand diagram.



1.2) Find equilibrium and how many buyer they are?



there is only 1 buyer in the market

equilibrium • $10 - \frac{1}{2}P$; $P > 10$

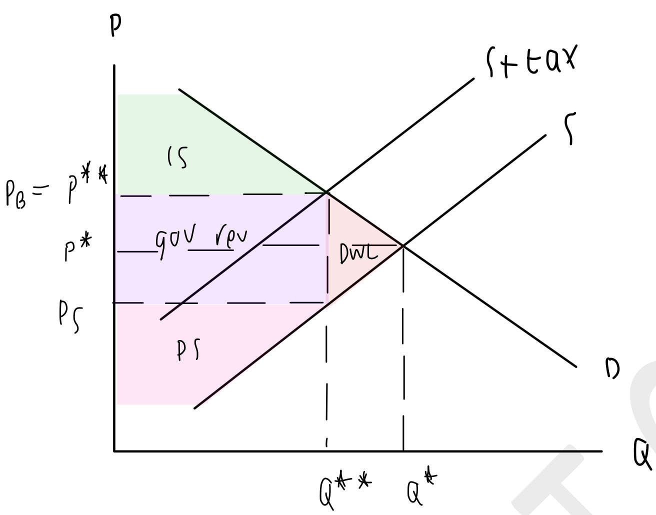
• $20 - \frac{3}{2}P$; $P \leqslant 10$

Example 3.J: Excess burden *formula under linear model & Tax-Revenue-maxizing tax rate*

Demand: $p^d = a - bQ^d \quad ; \; a \geq 0, \quad b \leq 0.$

Supply : $p^s = c + dQ^s \quad ; \; d \geq 0.$

- Solve for quantity and prices equilibrium when the unit tax is imposed. Analyze the result



$$Q^d = \frac{a - P}{b}$$

$$Q^s = \frac{P - c - t}{d}$$

eqbm ; $P^s = P^d$

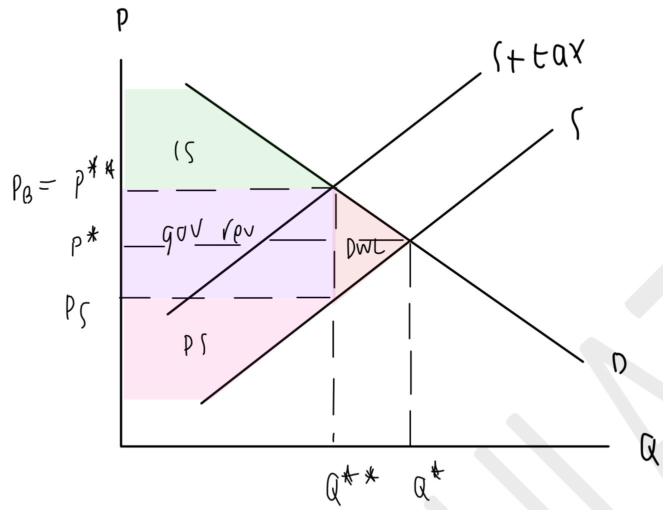
$$c + dQ^s + t = a - bQ^d$$

$$Q(d+b) = a - c - t$$

$$Q^{**} = \frac{a - c - t}{d + b}$$

$$P^{**} = c + t + d\left[\frac{a - c - t}{a + b}\right]$$

- Derive the excess burden formula for buyers and sellers



extra price that consumers pay is $(P_B - P^*) \times Q^{**}$

extra price that producers pay is $= P_S - P^*) \times Q^{**}$

- Calculate the tax rate that maximizes the tax revenue of government.

$$= \left(\frac{a - c - t}{d + b}\right) \times t$$

$$= at - ct - t^2 + d^{-1}t + b^{-1}t$$

$$0 = a - c - 2t - d - b$$

$$2t = a - c - d - b$$

$$t = \frac{a - c - d - b}{2}$$

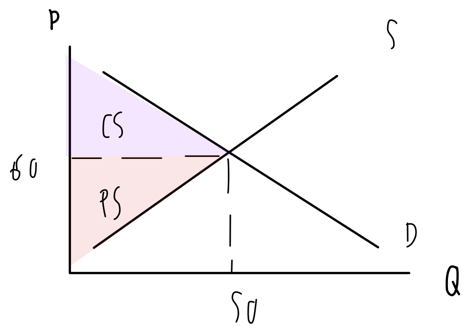
<u>Example 3.K</u> ***Price control and Welfare***

Consider the market for apartment rentals in Chicago. The price of rent is determined by the following system of equations.

Demand: $p = -2q_d + 160$

Supply: $p = q_s + 10$

- What is the equilibrium price and quantity in the market for apartment rentals?



equilibrium ; $P^S = P^d$

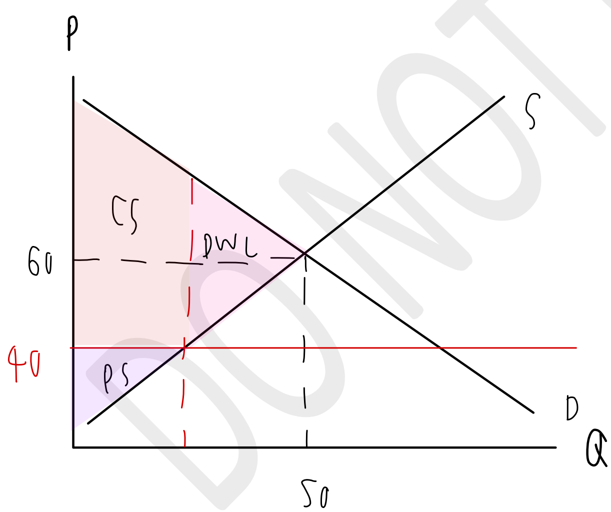
$Q^S + 10 = -2Q^d + 160$

$3Q = 150$

$Q = 50$

$P = 60$

- Suppose the government tries to control the rent prices through a price ceiling of $40. Discuss the implication of this policy. Is there any deadweight loss?



If the government tries to set the lower price of apartments, it will make demand of people who want to rent an apartment increase but on the other hand the owner of the apartment will not want to rent out their apartment to consumer.