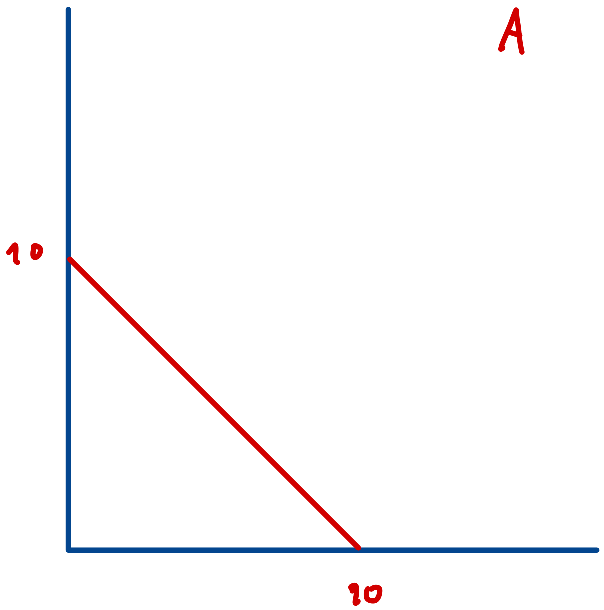
Example 3.G: Solve for the market equilibrium using the information in **Example 3.E** and **Example 3.F.** Justify your answer!

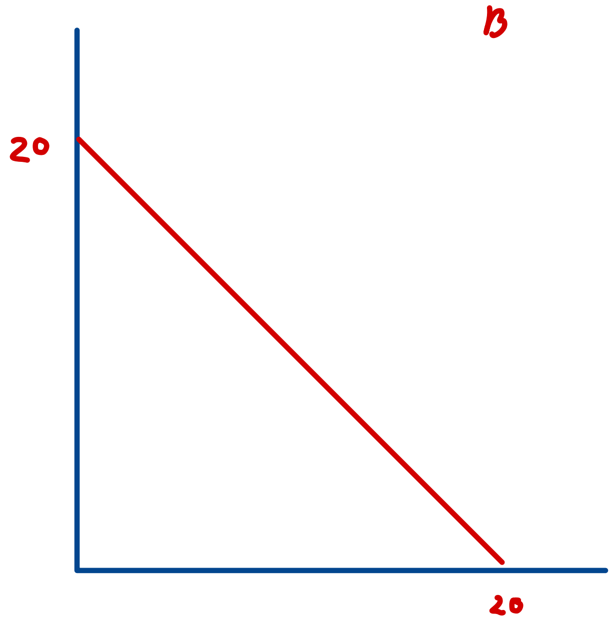
2 consumer 1 seller

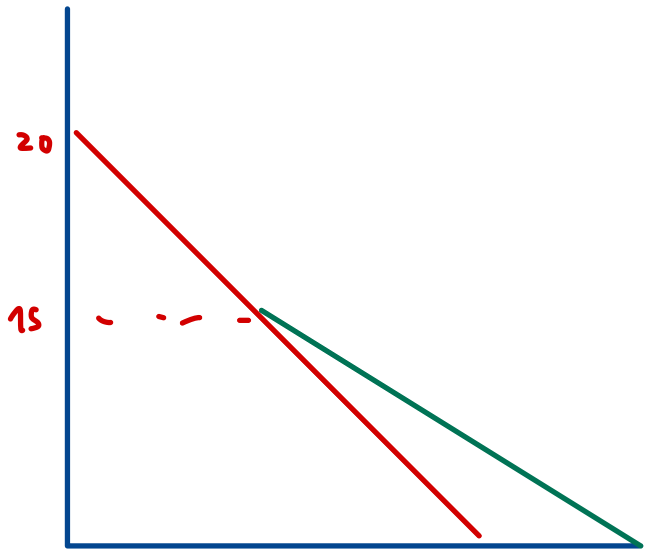
$$A: Q_A = 10 - p$$

$$B: Q_B = 10 - \frac{1}{2}p \qquad 20 - p$$

$$\left.\begin{matrix} Q_A \\ Q_B \end{matrix}\right\} 30 - 2p$$







∴ when price ≥ 15 buyer B buy while when price < 15 both buyers A and B buy

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

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

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

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

$$P = a - c - bQ^d - dQ^s$$

$$Q = -\frac{p^d - a}{b} - \frac{p^s - c}{d}$$

- Derive the excess burden formula for buyers and sellers

Consumer $= (P_B - p^s) \times Q^{tax}$

seller $= (p^* - P_s)\, Q\ tax$

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

Tax revenue = tax per unit × Q^* tax

Example 3.K ***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?

$3q = 150$

$q = 50 \qquad p = 60$

- 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?

$p = 40 \qquad q = 30$