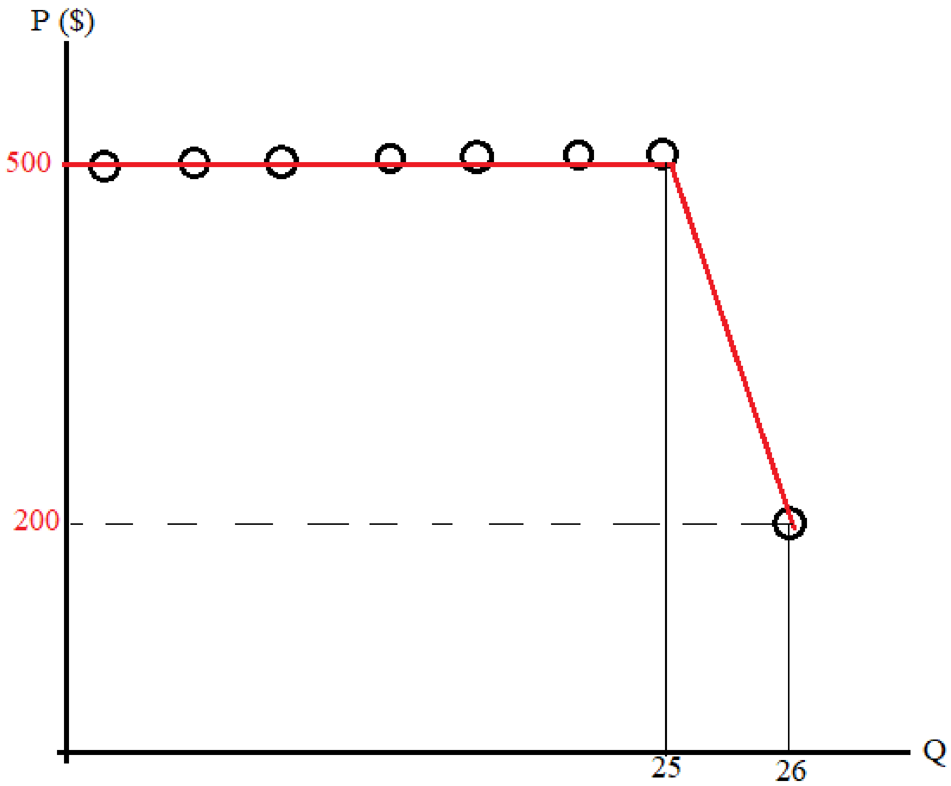
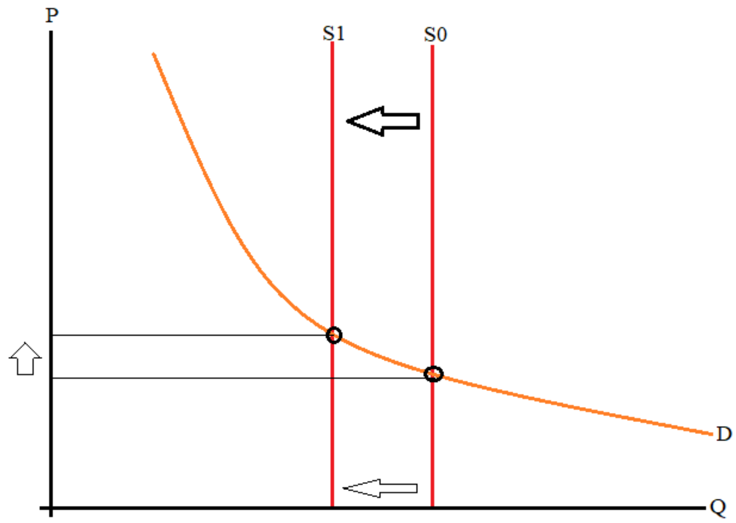
Question 1



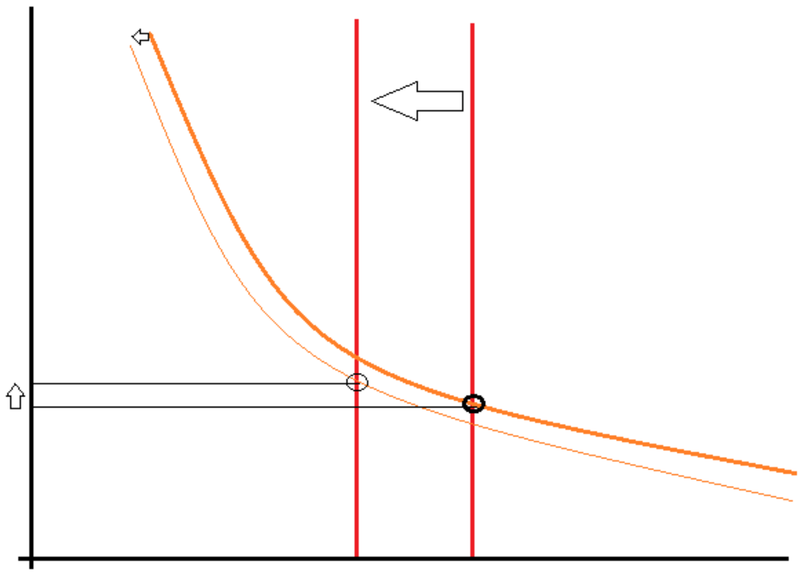
Question 2

A demand curve is constructed with the highest reservation price at first, then the second highest, and so on. So the curve is downward sloping because the reservation prices are decreasing. This is because the consumer with the highest reservation price is going to buy the product first, because he is willing to bid to highest price.

Question 4



Question 5



Question 7

1º) Finding the inverse demand curve from the demand curve:

$$\overbrace{D(p)}^{q} = 100 - 2p \rightarrow Demand\ curve$$

$$q - 100 = -2p$$

$$p = \frac{100}{2} - \frac{q}{2}$$

$$p(q) = 50 - \frac{q}{2} \rightarrow Inverse\ demand\ curve$$

2º) The monopolist wants to maximize his revenue (profit):

$$\max_q \overbrace{(pq)}^{Revenue} \quad such\ that\ q \leq 60$$

$$\max_q \left[\overbrace{\left(50 - \frac{q}{2}\right)}^{p} q \right] \quad such\ that\ q \leq 60$$

$$\max_q \left[50q - \frac{q^2}{2} \right] \quad such\ that\ q \leq 60$$

3º) First Order Condition (FOC):

$$50 - q^* = 0$$

$$\boldsymbol{q^* = 50}$$

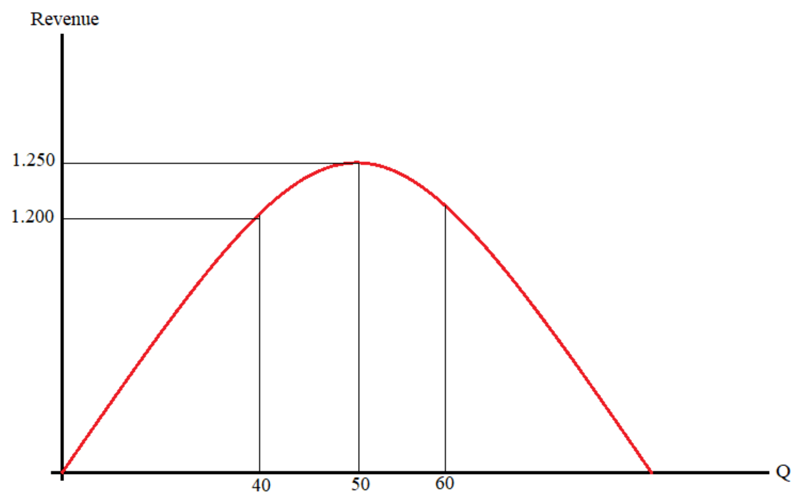
$q^* = 50$ does not violate the condition $q \leq 60$. So to maximize its profits, the monopolist has to offer 50 apartments.

4º) Price:

$$p^* = 50 - \frac{\overbrace{(50)}^{q^*}}{2}$$

$$\boldsymbol{p^* = 25}$$

5º) If the maximum q is 40, see that $q^* > q$ $(50 > 40)$. So the constraint is binding. So the number of apartments constructed is 40 (the maximum possible).



The price would be:

$$p = 50 - \frac{40}{2}$$

$$\boldsymbol{p = 30}$$