Repaso Parcial 3

Tuesday, March 7, 2023 2:45 PM

$q = \frac{1,000,000}{p^2} \longrightarrow p = \sqrt{\frac{1,000,000}{q}}$

$c(q) = 100q$

$\Pi = \underbrace{\frac{1,000,000}{p^{\cancel{2}}}}_{q} \cdot \cancel{p} - 100\left(\frac{1,000,000}{p^2}\right)$

$\frac{\partial \Pi}{\partial p} = -\frac{1,\cancel{000,}000}{p^2} - \frac{(-2)(100)(1,\cancel{000,}000)}{p^3} = 0$

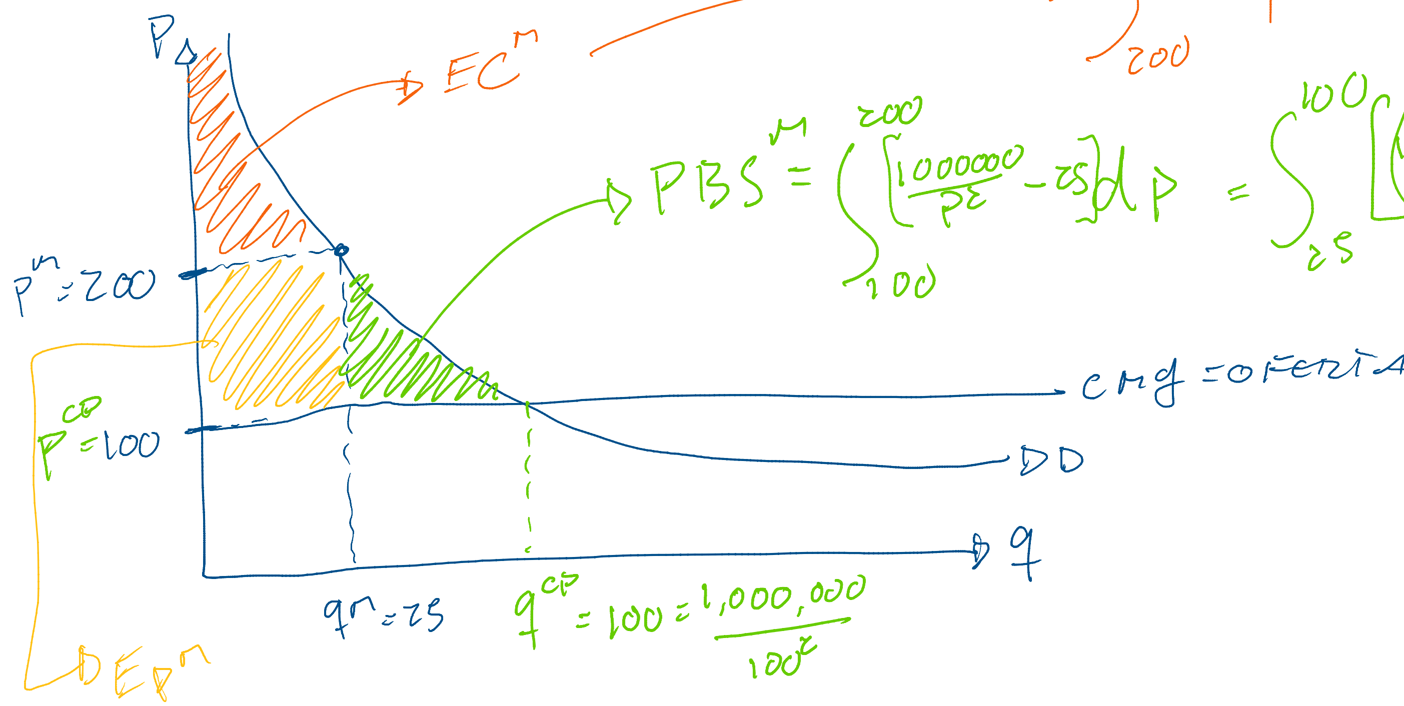
$-\frac{p^{\cancel{3}}}{\cancel{p^2}} + \frac{2(100)\,\cancel{p^3}}{\cancel{p^3}} = 0$

$\boxed{200 = p^m}$

$\boxed{q^m = \frac{1,000,000}{200^2} = \frac{1,00\cancel{0,000}}{4\cancel{0,000}} = 25}$

$\boxed{\Pi^m = 200 \cdot 25 - 25 \cdot 100 = 100 \cdot 25 = 2,500}$

$\int_{200}^{\infty} \frac{1000\,000}{p^2}\, dp = \int_{0}^{25} \left[\left(\frac{1,000\,000}{q}\right)^{1/2} - 100\right] dq$



$PBS^m = \int_{100}^{200} \left[\frac{1000000}{p^2} - 25\right] dp = \int_{25}^{100} \left[\left(\frac{1000000}{q}\right)^{1/2} - 100\right] dq$

$q^m = 200,000$

$p^m = 1000$

CMg?

$$\boxed{\begin{array}{l} P = 1010 \\ q = 195{,}000 \end{array}}$$

$$\varepsilon \approx \frac{\Delta q}{\Delta P} \cdot \frac{P}{q} = \frac{-5\cancel{000}}{10} \cdot \frac{1\cancel{000}}{200{,}\cancel{000}}$$

$$\boxed{\varepsilon \approx -\frac{50}{20} = \frac{5}{2} = -2.5}$$

$$\boxed{\Pi = Pq - Cq}$$

$$\frac{\partial \Pi}{\partial q} = \frac{\partial P}{\partial q} \cdot q + P - C = 0$$

$$P\left[\frac{\partial P}{\partial q}\frac{q}{P} + 1\right] = C$$

$$P^M\left[\frac{1}{\varepsilon} + 1\right] = C$$

$$1000\left[\frac{1}{-2.5} + 1\right] = C$$

$$1000\left[\frac{1}{-\frac{5}{2}} + 1\right]$$

$$1000\left[-\frac{2}{5} + 1\right]$$

$$1000\left[\frac{3}{5}\right] = \frac{3000}{5} = \boxed{600 = Cmg}$$

$q^M = 125$

$P^M = 2500$

$P^M\left[\frac{1}{\cdot} + 1\right] = Cmg$

$q = 10$
$p^m = 2500$

$$\underbrace{p^m \left[\frac{1}{\varepsilon} + 1\right]}_{Img} = Cmg$$

$$\Rightarrow p^m < Img \qquad \text{Pues } \frac{1}{\varepsilon} + 1 \in (0,1)$$

$$CT = \frac{Q^2}{4} \longrightarrow Cmg = \frac{Q}{2}$$

$$q^D = 180 - \frac{P}{2} \Rightarrow 2q = 360 - P \Rightarrow \boxed{P = 360 - 2q}$$

$$\pi = \left(180 - \frac{P}{2}\right)P - \frac{\left(180 - \frac{P}{2}\right)^2}{4}$$

$$\frac{\partial \pi}{\partial P} = 180 - P - \frac{\cancel{2}\left(180 - \frac{P}{2}\right)}{4}\left(-\frac{1}{\cancel{2}}\right) = 0$$

$$180 - P + \frac{(360 - P)}{8}$$

$$180 - P + \frac{360}{8} - \frac{P}{8}$$

$$= 180 - P + \frac{180}{4} - \frac{P}{8} = 0$$

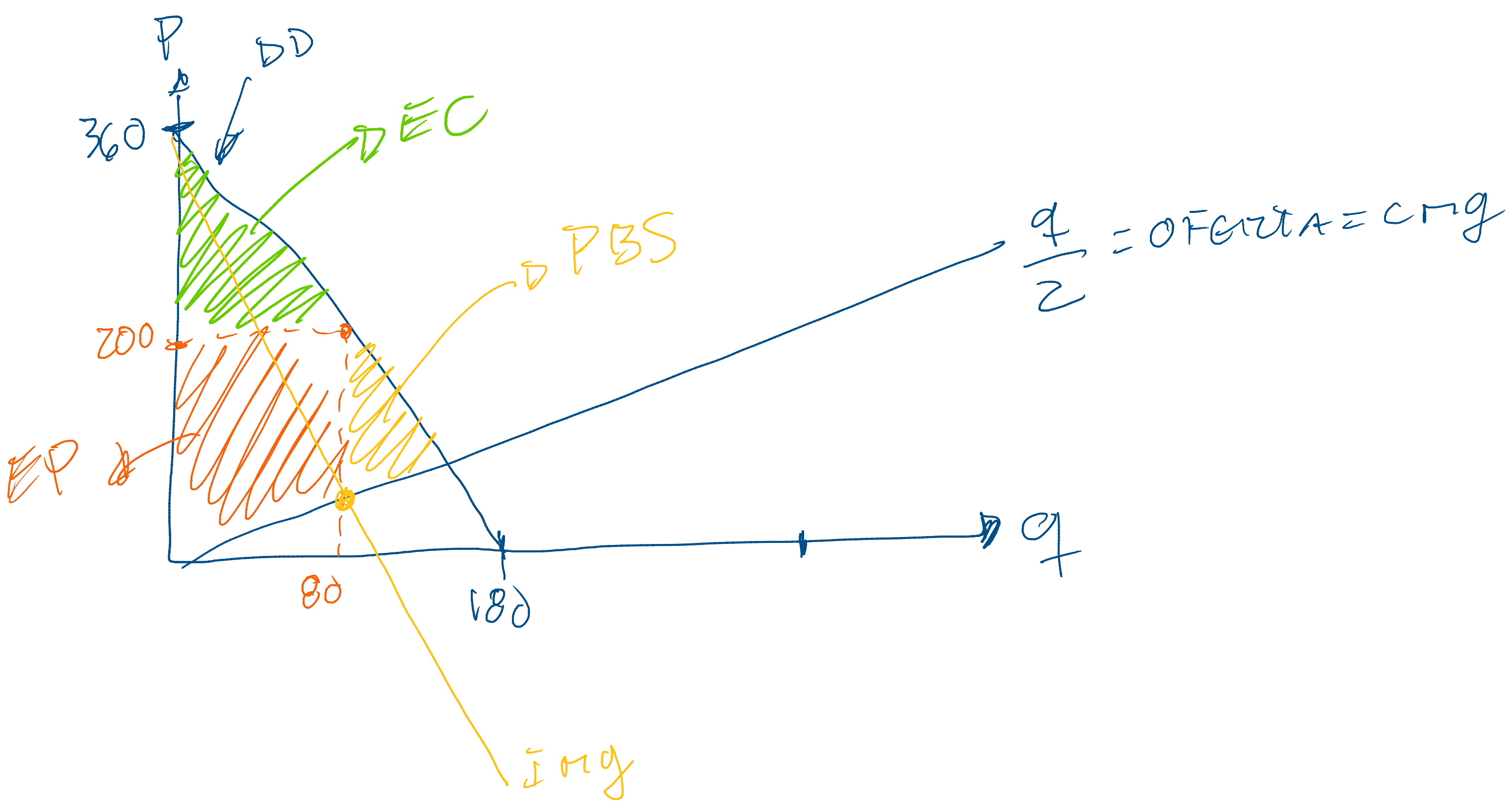
$$= 225 - \frac{9P}{8} = 0$$

$$\frac{225 \cdot 8}{9} = P$$

$$\boxed{200 = P^m}$$

$$\boxed{q^m = 180 - \frac{P}{2} = 180 - 100 = 80}$$

$$\pi^m = 200 \cdot 80 - \frac{80^2}{4}$$



$\varepsilon_A = -2$

$\varepsilon_B = -5$

$CMg_A = CMg_B$

$P^m_A = 200$

$P^m_B = ?$

$$P^m\left[\frac{1}{\varepsilon} + 1\right] = \boxed{CMg}$$

$$P\left[\frac{1}{\varepsilon}+1\right]=\boxed{CMg}$$

$$200\left[\frac{-1}{2}+1\right]=CMg_A$$

$$\boxed{100=CMg_A=CMg_B}$$

$$P_B^M\left[\frac{-1}{5}+1\right]=100$$

$$P_B^M\left[\frac{4}{5}\right]=100$$

$$\boxed{P_B^M=\frac{500}{4}=125}$$

//

$$P_A=60{,}000-10q_A$$

$$P_B=25000-5q_b$$

$$CT=5q^2=(q_a+q_b)^2\cdot 5$$

a) Si Discrimina

$$\max_{q_a,q_b}\ \pi=(60000-10q_A)q_A+(25000-5q_b)q_b-(q_a+q_b)^2\cdot 5$$

$$\frac{\partial\pi}{\partial q_a}=60000-20q_a-2(q_a+q_b)\cdot 5=0$$

$$\frac{\partial\pi}{\partial q_b}=25000-10q_b-2(q_a+q_b)\cdot 5=0$$

$$\frac{\partial \pi}{\partial q_b} = 25000 - 10q_b - 2(q_a + q_b)\cdot 5 \ldots$$

$$\Rightarrow \begin{cases} 60000 - 30q_a - 10q_b = 0 \\ 25000 - 20q_b - 10q_a = 0 \end{cases}$$

$$(\times -2)\quad -120{,}000 + 60q_a + 20q_b = 0$$

$$-95{,}000 + 50q_a = 0$$

$$\boxed{q_a^{D} = \frac{95{,}000}{50} = 1900}$$

$$\frac{60000 - 30(1900)}{10} = q_b^{D}$$

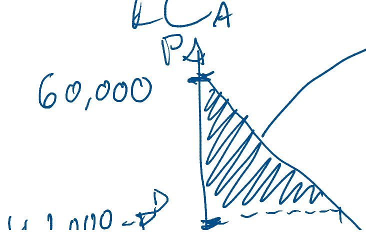
$$\boxed{300 = q_b^{D}}$$

$$\boxed{P_a^{D} = 60000 - 10(1900) = 41{,}000}$$

$$\boxed{P_b^{D} = 25000 - 5(300) = 23{,}500}$$

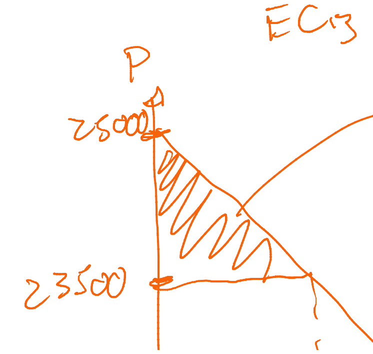
$$\pi = 41000(1900) + 23{,}500(300) - 5(300 + 1900)^2$$

EC_A

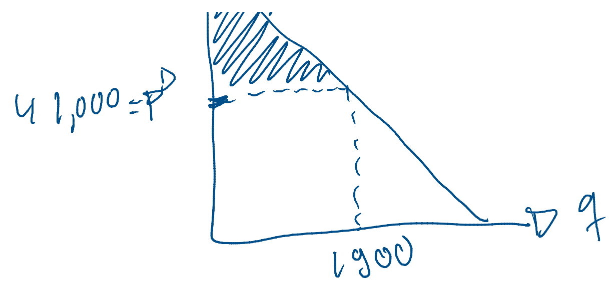


$$\frac{(60000 - 41000)(1900)}{2}$$

EC_B



$$\frac{(25000 - 23500)300}{2}$$



(b) $Q_T = Q_a + Q_b$

$P_A = 60{,}000 - 10q_a$

$$\boxed{q_a = \frac{60000 - P_A}{10} = 6000 - \frac{P_a}{10}} \to q_a = \begin{cases} 0 & P_A > 60000 \\ 6000 - \frac{P_A}{10} & P_A < 60000 \end{cases}$$

$P_b = 25000 - 5q_b$

$$\boxed{q_b = \frac{25000 - P_b}{5} = 5000 - \frac{P_b}{5}} \to q_b = \begin{cases} 0 & P_b > 25000 \\ 5000 - \frac{P_b}{5} & P_b < 25000 \end{cases}$$

si $P < 25000$

$\max_P \; Pq - q^2 \cdot 5$

$\Pi = P\left(6000 - \frac{P}{10} + 5000 - \frac{P}{5}\right) - \left(6000 - \frac{P}{10} + 5000 - \frac{P}{5}\right)^2 \cdot 5$

$\max_P \; \Pi = P\left(11000 - \frac{3P}{10}\right) - \left(11000 - \frac{3P}{10}\right)^2 \cdot 5$

$\frac{\partial \Pi}{\partial P} = 11000 - \frac{6P}{10} - \cancel{10}\left(11000 - \frac{3P}{10}\right)\left(\frac{-3}{\cancel{10}}\right) = 0$

$\ldots 000 - \frac{9P}{10} = 0$

si $P \geq 25000$
$P < 60{,}000$

$\max_P \; P \cdot \left(6000 - \frac{P}{10}\right) - \left(6000 - \frac{P}{10}\right)^2 \cdot 5$

$\frac{\partial \Pi}{\partial P} = 6000 - \frac{2P}{10} - \cancel{10}\left(6000 - \frac{P}{10}\right)\left(\frac{-1}{\cancel{10}}\right)$

$= 6000 - \frac{2P}{10} + 6000 - \frac{P}{10} = 0$

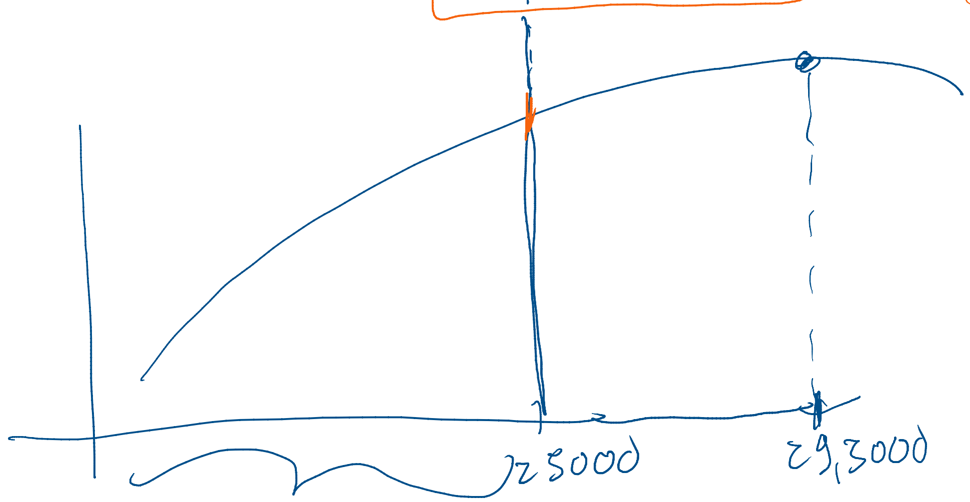
$12000 - \frac{3P}{10} = 0$

$$\frac{\partial \Pi}{\partial P} = 11000 - \frac{6P}{10} + 33000 - \frac{9P}{10} = 0$$

$$44000 = \frac{15P}{10}$$

$$\frac{44000 \cdot 10}{15} = P$$

$$\boxed{29{,}\cancel{333} = P} \longrightarrow P = 25000$$



$\Pi(25000) =$ ✓

$$\frac{12{,}000 \cdot 10}{3} = P$$

$$40{,}000 = P^M$$

$\Pi^M(40{,}000)$