MICRO I
SOLUCIÓN
EXAMEN AGOSTO

EJERCICIO 1

$$CT(w,q) = wq^2 - 10q + 100$$

$$Q_D = -1.000p + 40.000$$

(a) $w = 1$

$$CT(q,1) = q^2 - 10q + 100$$

$$CTMe(q,1) = q - 10 + \frac{100}{q}$$

$$\frac{\partial CTMe}{\partial q} = 1 + -\frac{100}{q^2} = 0 \Rightarrow 1 = \frac{100}{q^2} \Rightarrow q^2 = 100$$

$$\Rightarrow q = \sqrt{100}$$

$$\Rightarrow \boxed{q^* = 10}$$

(b) $P = CTMe_{mín} = CTMg$ en q^* $\Rightarrow$ $\boxed{P = 10}$

$10 - 10 + \frac{100}{10}$

$$Q_D = -1.000 \times 10 + 40.000 = \boxed{30.000}$$

$$n = \frac{30.000}{10} = \boxed{3.000}$$

(c) $w = 4$

$$CT(q,4) = 4q^2 - 10q + 100$$

$$CTMe(q,4) = 4q - 10 + \frac{100}{q}$$

$\frac{\partial CTe}{\partial q}(q,4) = 4 - \frac{100}{q^2} = 0 \Rightarrow q^2 = 25 \Rightarrow q^* = \sqrt{25}$ (2)

$$\boxed{q^* = 5}$$

$P^* = CTe(5) = 4 \times 5 - 10 + \frac{100}{5} = \boxed{30}$

$Q_D = -1.000 \times 30 + 40.000 = \boxed{10.000}$

$n \cdot \frac{\quad}{5} = Q_D = 10.000$

$u^* = \frac{10.000}{5} \Rightarrow \boxed{u^* = 2.000}$

(d) $Q_D = -1.000\,p + 60.000$

(a) $w = 1$ – $q = 10$ no cambia

(b) $P = 10$ – no cambia

$Q_D = -1000 \times 10 + 60.000$

$$\boxed{Q_D^* = 50.000}$$

$u^* = \frac{50.000}{10} \Rightarrow \boxed{u^* = 5.000}$

(c) $w = 4$

$\boxed{q^* = 5}$ – no cambia

$\boxed{P^* = 30}$ " "

$Q_D = -1.000 \times 30 + 60000 =$

$$\boxed{Q_D^* = 30.000}$$

$u^* = \frac{Q^*_D}{q^*} \Rightarrow u^* = \frac{30.000}{5} = \boxed{6.000}$

$$\max_{(k,l)} \pi(k,l) = p \cdot f(k,l) - wl - rk$$

$$\max_{(k,l)} \pi(k,l) = p\left[10 \min(k,l)^{\gamma}\right] - wl - rk$$

$$\downarrow k = l$$

$$\max_{(k)} \pi(k) = p\left[10 k^{\gamma}\right] - (w+r)k$$

$$\pi'(k) = \gamma \cdot p \cdot 10 \cdot k^{\gamma-1} - (w+r) = 0$$

$$\pi''(k) = (\gamma-1)\gamma\, p\, 10\, k^{\gamma-2} < 0$$

$$\underset{(+)}{} \quad \underset{(+)}{} \quad \underset{(+)}{}$$

$\gamma = -2$

$5^{-4} = \frac{1}{54} > 0$

$$\Updownarrow$$

$$(\gamma-1)\times\gamma < 0$$

$\gamma = 0 \Rightarrow (\gamma-1)\gamma = 0 \not< 0$

$\gamma = 1 \Rightarrow (\gamma-1)\gamma = 0 \not< 0$

$\gamma < 0 \Rightarrow \underset{(-)}{(\gamma-1)}\underset{(-)}{\gamma} \geq 0 \not< 0$

$\gamma > 1 \Rightarrow \underset{(+)}{(\gamma-1)}\underset{(+)}{\gamma} > 0 \not< 0$

$$\Downarrow$$

$$0 < \gamma < 1$$

(b) $\gamma = 0{,}5$

Ingresos $= I(q) = p \cdot q$

$$I(k,l) = p \cdot 10 \min(k,l)^{0,5}$$

Costos $= \min_{(k,l)} wl + rk$

s.a. $q = 10\left[\min(k,l)\right]^{0,5}$

$$\Downarrow$$

$$k = l$$

Restricción = $q = 10\sqrt{k}$

$$\sqrt{k} = \frac{q}{10}$$

$$k = \frac{q^2}{100}$$

Función de costos =

$$\boxed{C(w, v, q) = (w+v) \cdot \frac{q^2}{100}}$$

Función de beneficios =

$$\pi(w, v, q, p) = p \cdot q - C(w, v, q)$$

$$\boxed{\pi(q; p, w, v) = p \cdot q - (w+v) \cdot \frac{q^2}{100}}$$

(c) $v = 1.000$

$w = 500$

$p = 600$

$$\pi(q) = 600q - \left(\frac{1.500}{100}\right) q^2 = 600q - 15q^2$$

$$\pi'(q) = 600 - 30q^* = 0$$

$$q^* = \frac{600}{30} \Rightarrow \boxed{q^* = 20}$$

$$\pi(20) = 600 \times 20 - 15 \times (20)^2 = 1200 - 15 \times 400 = 12.000 - 6.000$$

$$\boxed{\pi(20) = 6.000}$$

(d) $p = 900$

$$\Pi(q) = 900q - 15q^2$$

$$\Pi'(q) = 900 - 30q^* = 0$$

$$q^* = \frac{900}{30} \Rightarrow$$

$$\boxed{q^* = 30}$$

$$\Pi(30) = 900 \times 30 - 15 \times (30)^2 = 27.000 - 13.500$$

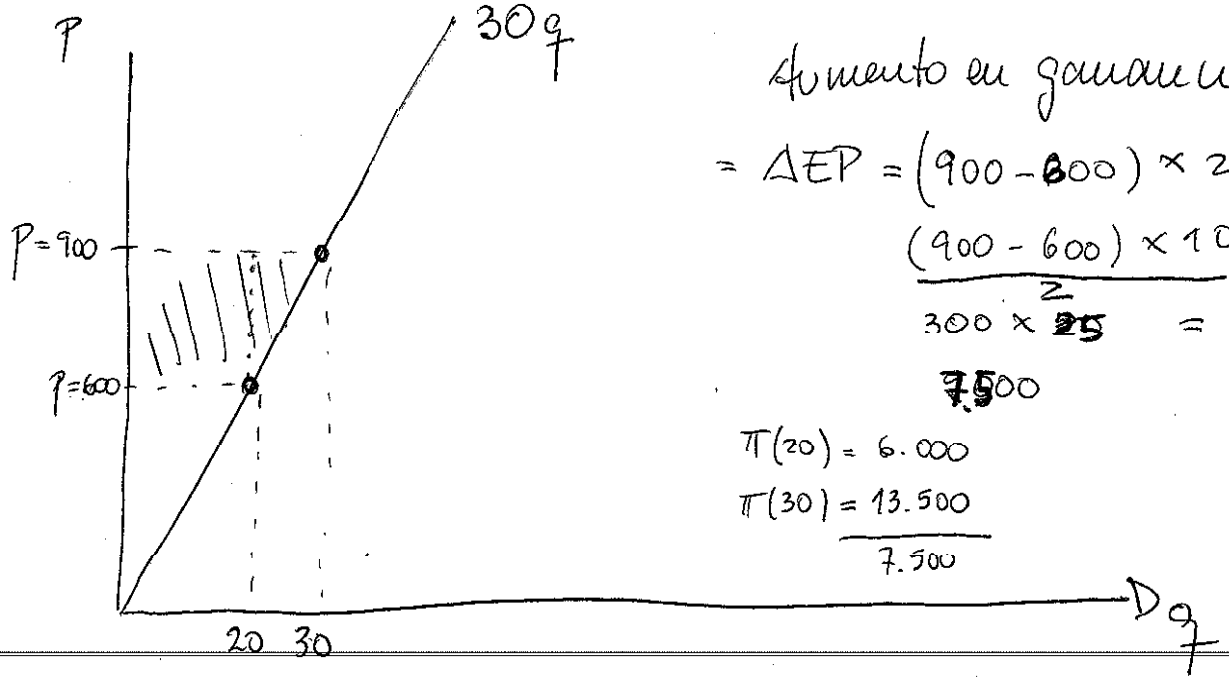
$$\boxed{\Pi(30) = 13.500}$$

(e) Curva de oferta de UTU:

$$p = CMg(q)$$

$$p = \frac{\partial CT}{\partial q} = \frac{\partial [15q^2]}{\partial q} = 30q$$

$$p = 30q$$



Aumento en ganancias punto (d

$= \Delta EP = (900 - 600) \times 20 + \frac{(900 - 600) \times 10}{2} =$

$300 \times 25 =$

7.500

$\Pi(20) = 6.000$

$\Pi(30) = 13.500$

7.500

EJERCICIO 3

$$U = x^{\alpha} y^{1-\alpha}$$

(a) $\max_{(x,y)} U(x,y) = x^{\alpha} \cdot y^{1-\alpha}$

s.a. $I = P_x \cdot x + P_y \cdot y$

$$\vdots$$

$$x^* = \frac{\alpha \cdot I}{P_x}$$

$$y^* = \frac{(1-\alpha) I}{P_y}$$

$$V(P_x, P_y, I) = \left(\frac{\alpha I}{P_x}\right)^{\alpha} \cdot \left(\frac{(1-\alpha) I}{P_y}\right)^{1-\alpha}$$

$$= \frac{\alpha^{\alpha} I^{\alpha} \cdot (1-\alpha)^{(1-\alpha)} \; I^{(1-\alpha)}}{P_x^{\alpha} \; P_y^{(1-\alpha)}}$$

$$\boxed{= \frac{\alpha^{\alpha} (1-\alpha)^{(1-\alpha)} \cdot I}{P_x^{\alpha} \cdot P_y^{(1-\alpha)}}}$$

(b) Función de gasto =

$$\boxed{E(P_x, P_y, U) = \frac{U \; P_x^{\alpha} \; P_y^{(1-\alpha)}}{\alpha^{\alpha} (1-\alpha)^{(1-\alpha)}}}$$

(c) $\frac{\partial E}{\partial P_x} = \frac{\alpha \cdot U \cdot P_x^{\alpha-1} \cdot P_y^{(1-\alpha)}}{\alpha^{\alpha} \cdot (1-\alpha)^{(1-\alpha)}} = \frac{U \cdot (P_y/P_x)^{(1-\alpha)}}{\alpha^{(\alpha-1)} \; (1-\alpha)^{1-\alpha}} = \frac{U \cdot (P_x/P_y)^{(1-\alpha)}}{((1-\alpha)/\alpha)^{1-\alpha}}$