



ASIGNATURA \_\_\_\_\_

NOMBRE DEL ALUMNO \_\_\_\_\_

FECHA \_\_\_\_\_ CURSO \_\_\_\_\_ GRUPO \_\_\_\_\_

$$F(L, K) = L^{1/3} (K - A)^{1/3}$$

① (a)  $A = 0$   $F(L, K) = L^{1/3} K^{1/3}$

$$F(tL, tK) = (tL)^{1/3} (tK)^{1/3} = t^{1/3} t^{1/3} L^{1/3} K^{1/3} = t^{2/3} L^{1/3} K^{1/3} < t L^{1/3} K^{1/3}$$

Es decir,  $F(tL, tK) < t F(L, K) \Rightarrow$  Rendimientos decrecientes  $t F(L, K)$

② (b)  $A = 2$   $w = r = 2$

$$PM_L = \frac{1}{3} L^{-2/3} (K - 2)^{1/3}$$
 Productividad marginal del trabajo

$$PM_K = \frac{1}{3} L^{1/3} (K - 2)^{-2/3}$$
 Productividad marginal del capital

$$RMST = \frac{PM_L}{PM_K} = \frac{\frac{1}{3} L^{-2/3} (K - 2)^{1/3}}{\frac{1}{3} L^{1/3} (K - 2)^{-2/3}} = \frac{K - 2}{L}$$

④ (c) Min  $wL + rK$

$L, K$  sujeto a  $F(L, K) = Q$

Condiciones de optimalidad

(C1)  $L^{1/3} (K - 2)^{1/3} = Q$

(C2)  $\frac{K - 2}{L} = 1$   
 $\underbrace{\hspace{1cm}}_{RMST} \quad \underbrace{\hspace{1cm}}_{w/r}$

Usando (C2),  $K - 2 = L$

Sustituyendo (2) en (1),  $L^{1/3} (K - 2)^{1/3} = Q \Leftrightarrow L^{1/3} L^{1/3} = Q$   
 $L^{2/3} = Q$

Entonces  $K^* = L^* + 2 = Q^{3/2} + 2$

$L^* = Q^{3/2}$

Coste total a LP:

$$\begin{aligned} C(Q) &= \omega L + rK = 2L + 2K = 2Q^{3/2} + 2(Q^{3/2} + 2) \\ &= 4 + 4Q^{3/2} = 4(1 + Q^{3/2}) \end{aligned}$$

Coste medio a LP:

$$C_{Me}(Q) = \frac{C(Q)}{Q} = \frac{4 + 4Q^{3/2}}{Q} = \frac{4}{Q} + 4Q^{1/2}$$

Coste marginal a LP:

$$C_M(Q) = \frac{\partial C(Q)}{\partial Q} = 4 \cdot \frac{3}{2} Q^{1/2} = 6Q^{1/2}$$

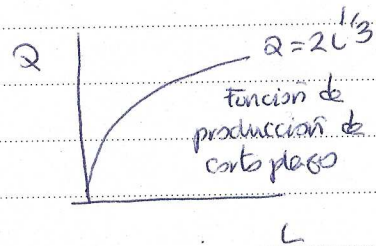
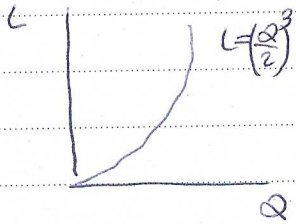
(d)  $\bar{K} = 10$

Función de producción de corto plazo

$$Q = L^{1/3} (10 - 2)^{2/3} = L^{1/3} 8^{2/3} = 2L^{1/3}$$

Para producir  $Q$  necesitamos...

$$L = \left(\frac{Q}{2}\right)^3$$



Coste total a corto plazo:

$$C^{CP}(Q) = \omega L + r\bar{K} = 2\left(\frac{Q}{2}\right)^3 + 2 \cdot 10 = 20 + \frac{Q^3}{4}$$

Coste medio a corto plazo:

$$C_{Me}^{CP}(Q) = \frac{C^{CP}(Q)}{Q} = \frac{20}{Q} + \frac{Q^2}{4}$$

Coste marginal a corto plazo:

$$C_M^{CP}(Q) = \frac{\partial C^{CP}(Q)}{\partial Q} = \frac{3Q^2}{4}$$