PRUEBA # 2 . SOLUCION

$F(K,L) = K^{1/2} + L^{1/2} - A$

$w = r = 1$

(a) $A = 0 \quad \rightarrow \quad F(K,L) = K^{1/2} + L^{1/2}$

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

Es decir, $F(tK,tL) = t^{1/2}F(K,L) < tF(K,L)$ para todo $t > 1$

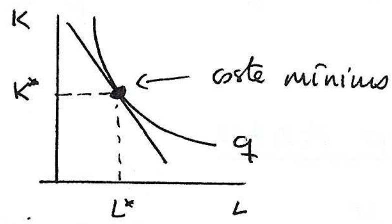
Rendimientos decrecientes de escala

(b) $A = 0$ $\qquad \min_{L,K} \; wL + rK$ sujeto a $F(K,L) = q$

Para calcular los costes totales a LP, escribimos las condiciones de optimalidad

(C1) $K^{1/2} + L^{1/2} = q$

(C2) $RMST = \frac{w}{r}$



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

(C1) $K^{1/2} + L^{1/2} = q$

(C2) $\frac{K^{1/2}}{L^{1/2}} = 1 \rightarrow K^{1/2} = L^{1/2} \rightarrow K = L$

Sustituyendo (C2) en (C1) $\rightarrow K^{1/2} + K^{1/2} = q \rightarrow 2K^{1/2} = q \rightarrow K^* = \left(\frac{q}{2}\right)^2$

Los costes totales son $\qquad L^* = K^* = (q/2)^2$

$$C(q) = wL^* + rK^* = (q/2)^2 + (q/2)^2 = 2(q/2)^2 = \frac{q^2}{2}$$

$CM = q \qquad CMe = q/2 \qquad$ El coste medio es creciente $\rightarrow$ deseconomías de escala

(c) $A = 2$. Corto plazo: $\bar{K} = 4$

$q = K^{1/2} + L^{1/2} - 2$. Como $K = 4 \rightarrow q = 2 + L^{1/2} - 2 = L^{1/2}$

Entonces $L = q^2$

Los costes totales son

$C(q) = wL + r\bar{K} = q^2 + 4$

$CM = 2q \qquad CMe = \frac{q^2+4}{q} = q + 4/q$ (es decir $CVMe = q$, $CFMe = 4/q$)

(d) $\begin{cases} p = CM & \text{si } p \geq CVMe\ min \\ q = 0 & \text{si } p < CVMe\ min \end{cases}$

Para calcular CVMe min igualamos $\quad CM = CVMe$

$2q = q \rightarrow q = 0 \rightarrow CVMe\,min = 0$

El precio mínimo de entrada es cero.

Entonces $p = CM$ si $p \geq 0$

$p = 2q \rightarrow \boxed{q = 2/p}$ Función de oferta individual a CP.