

隨11. 偉力公司生產函數 $q = 10L^{0.5}K^{0.5}$, $W=1=10$, 設 K 固定為 K_0 .

(A) 求短期成本函數 (STC), 平均成本函數 (AC), 邊際成本函數 (MC)

$$L^* = \left(\frac{q}{10K^{0.5}}\right)^2 = \frac{q^2}{100K} \xrightarrow{W=1=10} 10 \cdot \frac{q^2}{100K} + 10K = \frac{q^2}{10K} + 10K \text{ (STC)}$$

$$AC = \frac{STC}{q} = \frac{q}{10K} + \frac{10}{q}K \text{ (AC)} \quad MC = \frac{\partial STC}{\partial q} = 2 \cdot \frac{q}{10K} = \frac{q}{5K} \text{ (MC)}$$

(B) $\frac{\partial STC}{\partial K} = \frac{-q^2}{10K^2} + 10 = 0 \Rightarrow K^* = \frac{q}{10}$ 代入 STC.

$$TC = STC(K=K^*) = \frac{q^2}{10 \times \frac{q}{10}} + 10 \cdot \frac{q}{10} = 2q \text{ (TC)}$$

隨12. $q=20$, AC 與 AVC 差為 10 元, $q=40$, AC, AVC 差為多少?

$$q=20, 20 \times 10 = 200$$

$$q=40: \frac{200}{40} = 5 \text{ 差 5 元}$$

隨13.

$$MC = 10q, FC = 100, q = 10, TC?$$

$$\int_0^{10} 10q \, dq = \frac{1}{2} \cdot 10 q^2 \Big|_0^{10} = 5q^2 \Big|_0^{10} = 500 - 0 = 500 \text{ (VC)}$$

$$500 + 100 = 600 \text{ (TC)}$$

※老師課堂上講說寫 9, 11, 12, 13, 但 f6 寫

9, 11, 12, 14, 不過老師說寫 13 or 14 都行!