No.
Date : :

3/30 #HW

(4) $q = 10L^{0.5}K^{0.5}$，且 $w = r = 10$，但設 K 固定 $K_0$

(A) 求短期成本、變動成本、邊際成本函數

TC

$\frac{K}{L} \frac{10}{10}$ $MC = 2$

$|MRTS| = \frac{MP_L}{MP_K} = \frac{w}{r} = 1$

$\frac{5L^{-0.5}K^{0.5}}{5L^{0.5}K^{-0.5}} = \frac{K}{L}$

$\Rightarrow L^* = K^* = 0.1q$

$q = 10L^{0.5}K^{0.5} = 10 \cdot (100)^{0.5} = 100$

$q = 10L^{0.5}K^{0.5} \rightarrow L^* = q^2/100K$

$TC = rK^* + wL^*$

$= 10 \cdot 0.1q + 10 \cdot 0.1q = 2q$

$STC = 10L^* + 10K = (q^2/10K) + 10K$

$MC = 2$

$AC = (q/10K) + (10K/q)$

$MC = q/5K$

(B) 由 (A) 反推總成本函數

$\frac{\partial STC}{\partial K} = \frac{-q^2}{10K^2} + 10 = 0 \Rightarrow \bar{K} = \frac{q}{10}$

$TC = STC(K = \bar{K}) = \frac{q^2}{10 \times (q/10)} + 10\frac{q}{10} = q + q$

$= 2q$

No.
Date

HW

7. 短期成本函數 $TC = q^3 - 12q^2 + q + 50$，且短期下的變動要素為勞動

(A) $q = 10$ 之 AFC.

$$AFC = \frac{FC}{q} = \frac{50}{10} = 5$$

(B) 產量多少時，AVC = MC

$$AVC = q^2 - 12q + 1$$

$$\rightarrow dAVC/dq = 2q - 12 = 0,\ q = 6$$

(C) 產量超過多少時，$AP_L$ start 遞減

根據生產和成本的對偶性，知道當 AVC 遞增時，$AP_L$ 遞減

$q > 6$

(D) 產量超過多少時，$MP_L$ start 遞減

$MC = 3q^2 - 24q + 1$　$dMC/dq = 6q - 24 = 0,\ q = 4$

根據生產和成本的對偶性，知道 MC 遞增時，$MP_L$ 遞減

$q > 4$