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題9 A权利金40, B:权利金100

技術→ A: $q=\min\{L/2, K/4\}$ / B: $q=\min\{L/4, K/2\}$

假設→ $w=1$, $r=2$

ANS:

(A) TC_A = 生產成本 + 权利成本

$LTC = wL + rK$

$= 1L + 2k$

$LTC = wL^* + rK^*$

$= 1\times 2q + 2\times 4q = 10q$ $\quad TC_A = 10q + 40$ #

$LTC = wL^* + rK^*$

$= 1\times 4q + 2\times 2q = 8q$ $\quad TC_B = 8q + 100$ #

(補):

成本極小化模型

→其他不变变下,固定权量

如何用 L, K

(B) $q=20$

$TC_A = 20\times 10 + 40 = 240$

$TC_B = 20\times 8 + 100 = 260$ → 故買A技術

(C) $q=40$

$TC_A = 40\times 10 + 40 = 440$

$TC_B = 40\times 8 + 100 = 420$ → 故買B技術

(D) 令 $TC_A < TC_B$, 則 $q < 30$

題11 $q = 10L^{0.5}K^{0.5}$, 且 $w=r=10$

ANS:

(A) $q = 10L^{0.5}\bar{K}^{0.5} \rightarrow L^* = q^2/100\bar{k}$

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

$AC = (q/10k) + (10k/q)$, $MC = (q/5k)$

(B) $\frac{\Delta STC}{\Delta k} = \frac{-q^2}{10k^2} + 10 = 0 \Rightarrow k^* = \frac{q}{10}$ 代入STC函数中

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

題12 $q=20$, AC與AVC差10元, 產量40時, AC與AVC差多少?

$SAC = SAFC + SAVC$

ANS:

$q=20$, $AC - AVC = AFC = 10 \rightarrow FC = AFC\times q = 10\times 20 = 200$

$q=40$, $AC - AVC = AFC = FC/q = 200/40 = 5$

題13 边際成本函数 $MC = 10q$, 且固定成本100元, 產量10

ANS:

$VC(10) = \int_0^{10} 10q\,dq = 5q^2\Big|_0^{10} = 500$,

$TC = VC + FC = 500 + 100$

$= 600$