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Week 6

4.

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

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

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

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

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

7. $TC = q^3 - 12q^2 + q + 50$

(A) $AFC = FC/q = 50/10 = 5$

(B) $AVC = q^2 - 12q + 1 \rightarrow dAVC/dp = 2q - 12 = 0 \rightarrow q = 6$

(C) 根據生產與成本的對偶性，AVC ↑ APL ↓

故答案為 $q \geq 6$

(D) $MC = 3q^2 - 24q + 1 \rightarrow dMC/dq = 6q - 24 = 0 \rightarrow q = 4$, MC ↑ MPL ↓

故答案為 $q \geq 4$