

Week 6.

4. 生产函数  $q = 10L^{0.5}K^{0.5}$ , 且  $w = r = 10$

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

$$STC = 10L^* + 10K = \frac{q^2}{10K} + 10K$$

$$AC = \frac{q}{10K} + \frac{K}{q}, \quad MC = \frac{q}{5K}$$

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

$$\rightarrow K^2 = \frac{q}{10}, \text{ 代入 } STC$$

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

$$+ 10 \times \frac{q}{10} = q + q = 2q$$

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

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

(B)  $AVC = q^2 - 12q + 1 \Rightarrow \frac{dAVC}{dq} = 2q - 12 = 0, q = 6$

(C) 根据生产反成本的对偶性,

$$AVC \uparrow, APC \downarrow \therefore q \geq 6$$

(D)  $MC = 3q^2 - 24q + 1 \Rightarrow \frac{dMC}{dq}$

$$= 6q - 24 = 0 \rightarrow q = 4, MC \uparrow, MPL \downarrow$$

$$\therefore q \geq 4$$