PRACTICE 9 - MICROECONOMICS

Bachelor Degree in Global Governance

Erminia Florio

erminia.florio@uniroma2.it

EXERCISE

- Given the production function $f(L, K) = L^{\frac{1}{5}} K^{\frac{4}{5}}$:

1. Find the general equation of an isoquant, and the isoquant relative to the level q = 10.
2. Calculate the marginal productivity of labor and capital and compute the marginal rate of technical substitution.
3. Find the equation of the isocost relative to the input prices w = 1 and r = 4 and solve the cost minimization for the isoquant given in point 1.
4. Compute the total cost for the firm.
5. What can you say about the returns to scale of the production function?

EXERCISE

- Given the production function $f(L, K) = L^2 K$:

1. Find the general equation of an isoquant, and the isoquant relative to the level q = 32.
2. Calculate the marginal productivity of labor and capital and compute the marginal rate of technical substitution.
3. Find the equation of the isocost relative to the input prices w = 2 and r = 2 and solve the cost minimization for the isoquant given in point 1.
4. Compute the total cost for the firm.
5. What can you say about the returns to scale of the production function?

EXERCISE

- Given the production function $f(L,K) = L^{\frac{3}{4}}K^{\frac{1}{4}}$:

1. Find the general equation of an isoquant, and the isoquant relative to the level q = 10.
2. Calculate the marginal productivity of labor and capital and compute the marginal rate of technical substitution.
3. Find the equation of the isocost relative to the input prices w = 3 and r = 1 and solve the cost minimization for the isoquant given in point 1.
4. Compute the total cost for the firm.
5. What can you say about the returns to scale of the production function?

EXERCISE

- Given that

$\bar{q} = 5 = f(L, K) = LK^{\frac{1}{4}}$, w = 2 and r = 3,

1. Carry out the cost minimization problem, assuming a short run time horizon (with K=16),
2. Find the optimal input bundle,
3. Compute the total cost sustained by the producer.
4. What can you say about the returns to scale of the production function?

EXERCISE

- Given

$\bar{q} = 32 = f(L, K) = L^{\frac{1}{2}} K^{\frac{1}{2}}$, w = 2 and r = 2

1. Carry out the cost minimization problem, assuming a short run time horizon (with K=16),
2. Find the optimal input bundle,
3. Compute the total cost sustained by the producer.
4. What can you say about the returns to scale of the production function?

EXERCISE

- Given

$\bar{q} = 1 = f(L, K) = L^{\frac{1}{5}}K$, w = 4 and r = 3

1. Carry out the cost minimization problem, assuming a short run time horizon (with K=2),
2. Find the optimal input bundle,
3. Compute the total cost sustained by the producer.
4. What can you say about the returns to scale of the production function?