

Problem Set 2

Cost Minimization and Cost Curves

1. Compute the cost curve of a firm (as a function of the input prices) who has access to the following production technology:

- $f(x_1, x_2) = \min(3x_1, 2x_2)$.
- $f(x_1, x_2) = 3x_1 + 2x_2$.

2. Suppose that the production function is given by $f(K, L) = 2 \ln K + 3 \ln L$ and the wage rate of labor and the rental rate of capital are both 1. What is the cost minimizing ratio of K/L ?

3. Suppose that a firm has two plant: 1 and 2. The cost curve of plant 1 is given by $c_1(y_2) = 100 + 20y_1$, and the cost curve of plant 2 is given by $c_2(y_2) = y_2^2$.

a. Suppose that the firm has to produce 1000 units of output. How much of it is produced in plant 1?

b. Suppose now that 100 in the cost curve of plant 1 is quasi fixed cost. For what range of outputs does the firm use only plant 2 to produce?

4. Suppose that the cost curve of a firm in the short run can be described by $c(y, k) = y(y - k)^2 + 2k$, where k denotes the size of the building where the firm is operating.

- For each y , compute the optimal size of the building.
- What is the long run cost curve of the firm?

5. Suppose that the cost curve of a firm is $c(y) = y^2 + 4$.

- What is $AVC(y)$?
- What is $AC(y)$?
- What is $MC(y)$?
- What level of output yields the minimum of average cost of production?
- What level of output yields the minimum of average variable cost of production?