Demand Theory

Market researchers at the Lawrence Corporation estimate that the demand function for the firm’s product is

 Q=50P-1.5 *I* 0.5

Where Q is the quality demanded, P is the product’s price and I am per capita disposable income. The marginal cost of the firm’s product is estimated to be $10. Population is assumed to be constant.

1. Lawrence’s price for its product is $20. Is this the optimal price? Why or why not?
2. If it is not the optimal price, write a brief memorandum indicating what price might be better and why.

On the basis of a regression analysis like those in Chapter 5, the Washington Company finds that its production function is

Log Q = 1.50 + 0.76 log *L* + 0.24 log K

Where Q is its daily output, L is the number of workers employed per day, and K is the number of machines used per day. The Washington Company’s product is sold in a competitive market at a price per unit of $10. The firm cannot influence the wage of workers or the price of machines.

1. If the wage of a worker is $30 per day, how many workers per unit of output should the firm hire?
2. What percentage of the firm’s revenue is spent on labor? Why?
3. Will the percentage vary depending on the daily wage of a worker? Why or why not?

According to the chief engineer at the Zodiac Company, Q=AL a Kb, where Q is the output rate, L is the rate of labor input, and K is the rate of capital input. Statistical analysis indicates that a=0.8 and b=0.3. The firm’s owner claims the plant has increasing returns to scale.

a. Is the owner correct?

b. If B were 0.2 rather than 0.3, would she be correct?

c. Does output per unit of labor depend only on a and b? Why or why not?