1. A firm estimates its long-run production function to be Q= -0.0075K3L3 + 12K2L2. If the firm fixes its K use at 12 units, what are this firm’s TP, MP, and AP equations?

2) Suppose a firm’s TVC function is TVC = 96Q – 2Q2 + 0.05Q3

a. What is this firm’s AVC equation?

b. What is this firm’s MC equation?

c. Theory predicts that MC equals AVC when AVC is at its minimum. Compute the value of Q when AVC is at its minimum, and check the accuracy of the prediction of this theory

3) Determine whether each statement given below is true or false and explain your answer in no more than 2 sentences.

a. A perfectly competitive firm has no incentive to raise or lower price to increase sales.

b. In an increasing- cost industry, output expansion will in the long run lead to a decrease in industry output and an increase in market price.

c. Unlike a perfectly competitive firm, an oligopolistic firm can continue to earn excess economic profit in the long-run.

d. If firms operating in a perfectly competitive market are currently earning excess economic profit, the market supply will decrease and the market price will increase in the long-run equilibrium

4) A company is considering between two projects: project 1 and project 2. The estimated cash flows and their probabilities of the two projects are given below.

|  |  |  |  |
| --- | --- | --- | --- |
| Project 1 | | Project 2 | |
| Cash inflow | Probability | Cash inflow | Probability |
| $3,000 | 0.10 | $2,000 | 0.10 |
| 4,000 | 0.20 | 3,500 | 0.25 |
| 5,000 | 0.40 | 5,000 | 0.30 |
| 6,000 | 0.20 | 6,500 | 0.25 |
| 7,000 | 0.10 | 8,000 | 0.10 |

a. Calculate the expected value (revenue) from each project.

b. The variances of project 1 and project 2 are 1,200,000 and 2,925,000, respectively. Calculate the coefficient of variation of each project.

c. Based on the coefficients of variation you computed in *b* above, determine which project the company should choose.

5) Suppose a manager faces the following cost, price, and total revenue functions for a steak lunch meals in a theme park restaurant.

TC = 5Q + 0.02Q2

P = 20 -0.05Q

TR = 20Q – 0.05Q2

Where, Q = number of steaks served in a day.

a. What is the optimal number of steaks served?

b. What is the price that the manager charges for a steak?

c. What is the daily profit earned from steak lunches?