**Principles of Economics**

**PROBLEM SET NO 5**

**PART A (INTRODUCTION TO THE KEY CONCEPTS)**

1. Draw a production function that exhibits diminishing marginal product of labour. Draw the associated total-cost curve. (In both cases, be sure to label the axes.) Explain the shapes of the two curves you have drawn.
2. Sandra lives in Melbourne and runs a business that sells guitars. In an average year, she receives $2.6 million from sales of guitars. Of this sales revenue, she must pay the manufacturer a wholesale cost of $1,400,000. She also pays wages and utility bills totalling $1,100,000. If she does not operate this guitar business, she can work in an accounting firm and receive an annual salary of $70,000. She owns her showroom. If she chooses to rent it out, she will receive $50,000 in rent per year. Assume that the value of this showroom does not depreciate during the year. No other costs are incurred in running this guitar business. What is Sandra’s accounting profit (used for tax purposes)? What is her economic profit?
3. Indicate whether the following statement is TRUE or FALSE and *explain your answer*: Firm's average-total-cost curve is the same in the short run and in the long run *because* opportunity costs are included in both horizons.
4. MULTIPLE CHOICE (identify the one **best answer** below and *explain your reasoning for* ***each*** *option*):

The government imposes a $500 per year licence fee on all places selling sushi. Which cost curves out of the ones listed shift as a result?

* 1. total cost and marginal cost
  2. average fixed cost and average variable cost
  3. average total cost and fixed cost
  4. all of the above
  5. none of the above

**PART B (INDEPENDENT THINKING AND APPLICATION)**

1. ***(KEY QUESTION)*** A commercial fisherman notices the following relationship between hours spent fishing and the quantity of fish caught:

|  |  |
| --- | --- |
| Hours | Quantity of fish (kg) |
| 0 | 0 |
| 1 | 10 |
| 2 | 18 |
| 3 | 24 |
| 4 | 28 |
| 5 | 30 |

* 1. What is the marginal product of each hour spent fishing?
  2. Use these data to graph the fisherman's production function. Explain its shape.
  3. The fisherman has a fixed cost of $10 (his rod). The opportunity cost of his time is $5 per hour. Graph the fisherman's total-cost curve. Explain its shape.