KIA Fresh Graduates Program - Economics
Problem Set 1

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The market demand function for four-year private universities is given by the equation:

$$Q_d^{pr} = 84 - 3.1P_{pr} + 0.8I + 0.9P_{pu}$$

where Q_d^{pr} is the number of applicants to private universities per year in thousands, P_{pr} is the average price of private universities (in thousands of USD), I is the household monthly income (in thousands of USD), and P_{pu} is the average price of public (government-supported) universities (in thousands of USD). Assume that P_{pr} is equal to 38, I is equal to 100, and P_{pu} is equal to 18.

1. The price elasticity of demand for private universities is closest to:

   A. –3.1.

   B. –1.9.

   C. 0.6.

2. The income elasticity of demand for private universities is closest to:

   A. 0.5.

   B. 0.8.

   C. 1.3.

3. The cross-price elasticity of demand for private universities with respect to the price of public universities is closest to:

   A. 0.3.

   B. 3.1.

   C. 3.9.

4. If the cross-price elasticity between two goods is negative, the two goods are classified as:

   A. normal.

   B. substitutes.

   C. complements.

The manager of a small manufacturing firm gathers the following information about the firm's labor utilization and production:

Labor (L)	Total Product (TP)
0	0
1	150
2	320
3	510
4	660
5	800

Table 1: Labor utilization and production

5. Refer to the data in Table 1. The number of workers resulting in the highest level of average product of labor is closest to:

   A. 3.

   B. 4.

   C. 5.

6. Refer to the data in Table 1. The marginal product of labor demonstrates increasing returns for the firm if the number of workers is closest to but not more than:

   A. 2.

   B. 3.

   C. 4.

A firm's director of operations gathers the following information about the firm's cost structure at different levels of output:

Quantity (Q)	Total Fixed Cost (TFC)	Total Variable Cost (TVC)
0	200	0
1	200	100
2	200	150
3	200	200
4	200	240
5	200	320

Table 2: Cost structure at different levels of output

7. Refer to the data in Table 2. When quantity produced is equal to 4 units, the average fixed cost (AFC) is closest to:

   A. 50.

   B. 60.

   C. 110.

8. Refer to the data in Table 2. When the firm increases production from 4 to 5 units, the marginal cost (MC) is closest to:

A. 40.

B. 64.

C. 80.

9. Refer to the data in Table 2. The level of unit production resulting in the lowest average total cost (ATC) is closest to:

A. 3.

B. 4.

C. 5.

The production relationship between the number of machine hours and total product for a company is presented below.

Machine Hours	Total Product	Average Product
1	3	3.00
2	8	4.00
3	14	4.67
4	19	4.75
5	21	4.20

Table 3: Production relationship between machine hours and total product

10. Refer to the data in Table 3. Diminishing marginal returns first occur beyond machine hour:

A. 3.

B. 4.

C. 5.

11. The marketing director for a Swiss specialty equipment manufacturer estimates the firm can sell 200 units and earn total revenue of CHF500,000. However, if 250 units are sold, revenue will total CHF600,000. The marginal revenue per unit associated with marketing 250 units instead of 200 units is closest to:

A. CHF 2,000.

B. CHF 2,400.

C. CHF 2,500.