

EASTERN MEDITERRANEAN UNIVERSITY
DEPARTMENT OF MATHEMATICS

Math104 – Mathematics for Business and Economics II
 2017 – 2018 Spring Semester
 Second Midterm Exam



Date: 15.05.2018; Duration: 90 min.;
 Note: Calculator is allowed.



Question	Mark
1.	
2.	
3.	
4.	
5.	
TOTAL	

Name surname :

Student Number : Group Number:

Department : İmza:

1. The total revenue and the total cost functions for a product are given below:

$$R = 1750q - 0.025q^2 \text{ and}$$

$$C = 50000 + 250q + 0.075q^2$$

a) Use marginal approach to determine the profit maximizing level of output. (10 p.)

c) Find the maximum profit. (5 p.)

b) Construct the profit function. (5 p.)

2. The total cost function of producing q units of a certain product is given by

$$C = 50000 - 330q + 0.75q^2, \text{ where } C \text{ is the total cost (in dollars.)}$$

a) How many units must be sold in order to have minimum cost. (10 p.)

c) Determine the total cost if 100 units are sold. (5 p.)

b) Find the amount of minimum cost. (5 p.)

d) Determine the additional total cost to produce 100th unit. (5 p.)

3. The demand function for a firm's product is $q = 1750 - 35p$, where p is the price of the product (*in dollars*) and q is the number of units demanded.

a) Determine the price that should be charged to maximize the total revenue. (15 p.)

b) How many units must be demanded at the maximizing level of price. (5 p.)

c) What is the maximum revenue? (5 p.)

4. The demand function for a firm's product is $q = 2750 - 125p$, where p is the price of the product (*in dollars*) and q is the number of units demanded.

a) Determine and identify the elasticity of demand when $p = 75$ \$ (8 p.)

b) Determine the revenue when $p = 75$ \$. (4 p.)

c) Determine the price such that demand is unit elastic. (8 p.)

5. Given $z = f(x, y) = \frac{2}{3}x^{\frac{3}{2}}y^3 + \frac{y}{x^2} - 5xy$.

Find the following.

a) $f_x =$

b) $f_{xx} =$

c) $f_{xy} =$

d) $f_y =$

e) $f_{yy} =$

f) $f_{yx} =$