

EASTERN MEDITERRANEAN UNIVERSITY
DEPARTMENT OF MATHEMATICS

Math103 – Mathematics for Business and Economics I



2018 – 2019 Fall Semester
First Midterm Exam



Date: Nov. 21, 2018; Duration: 90 min.;
Note: Calculator is not allowed.

Question	Mark
1.	
2.	
3.	
4.	
5.	
6.	
TOTAL	

Name, surname :

Student number : Group no:

Department : Signature:

1. Solve the following equations.

a) $\frac{x+3}{2} + \frac{2x-1}{5} = x+1$ (6 p.)

c) $|2x-1| - x = 2$ (6 p.)

b) $x-2 = \sqrt{x+4}$ (8 p.)

2. Solve the following inequalities.

a) $x^2 - 2x - 3 > 0.$ (7 p.)

b) $\frac{x-7}{x+5} \leq -3$ (8 p.)

3. a) Solve the following system;

$$4x + 3y = 5$$

$$x - 2y = 4$$

$$-3x + 5y = -1$$

(8 p.)

b) Write the equation of the line which passes through $(3, -2)$ and parallel to the line

$$6x - 3y = 10.$$

(7 p.)

4. A firm produces and sells a product. The firm calculated that the cost to produce 15 units of the product is 80\$ and the cost to produce 25 units is 120\$.

- a) Determine the linear cost function; $C = f(q)$.
(10 p.)

- b) Estimate the cost if 50 units are produced.
(5 p.)

5. A firm produces and sells a product. The selling price of the product is \$18 per unit. The firm determines that the raw material cost per unit is \$6 and the labor cost per unit is \$4. It known that the fixed cost of the firm is \$600 per month.

- a) Find the number of units to be sold to have break even.
(10 p.)

- b) Determine the profit function. (5 p.)

- c) Determine how many units must be sold in order to have 1000\$ profit. (5 p.)

6. The demand; q_d , and supply; q_s , functions of a product are given as follows:
 $q_d = 600 - 50p$ and $q_s = 50p - 200$
where p is the price of the product.

a) Sketch the graphs of demand and supply functions, on the same plane. (8 p.)

b) Write the restricted domain and restricted range for demand function. (4 p.)

c) Write the restricted domain for supply function. (2 p.)

d) Determine the market equilibrium price and quantity. (6 p.)

e) Determine the revenue at the equilibrium price. (5 p.)