EASTERN MEDITERRANEAN UNIVERSITY
DEPARTMENT OF MATHEMATICS

Question	Mark
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6.	
TOTAL	

Math103 – Mathematics for Business and Economics I

2018 – 2019 Spring Semester
First Midterm Exam

Date: April 11, 2019; Duration: 90 min.;
Note: *Calculator is not allowed*.

Name, surname : .....

Student number : ..... *Group no*: .....

Department : ..... *Signature*:

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1. Solve the following equations.

a) $\frac{x}{4}-\frac{x+2}{3}=1-\frac{x}{2}$ (6 p.)

b) $3x^2-7x+4=0$ (7 p.)

c) $\left|\frac{x}{2}-3\right|=2$ (6 p.)

d) $\sqrt{x^2+8}=x-2$ (6 p.)

2. Solve the following inequalities.

a) $x^2 - 3x < 10$ (7 p.)

b) $\frac{3x-1}{x+1} \leq 4$ (8 p.)

3. a) Solve the following system;

$$5x + \frac{1}{2}y = 4$$
$$y = 3x - 5$$

(8 p.)

b) Write the equation of the line which passes through $(2,-3)$ and parallel to the line $6x - 3y = 15.$ (7 p.)

4. Suppose that the supply for a product is 300 units if the market price is 15$ per unit, and 600 units if the market price is 25$ per unit.

a) Determine the linear supply function; $q_s = f(p)$. (10 p.)

b) Estimate the supply if market price is 40$. (5 p.)

5. A firm produces and sells a product. The selling price of the product is $105 per unit. The firm determines that the raw material cost per unit is $35 and the labor cost per unit is $40. It known that the fixed cost of the firm is $1800 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 1500$ profit. (5 p.)

6. The demand; q_d, and supply; q_s, functions of a product are given as follows:
$q_d = 1200 - 40p$ and $q_s = 25p - 100$
where p is the price of the product.

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

b) Sketch the graphs of demand and supply functions, on the same plane. Show the equilibrium point. (6 p.)

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

d) Write the restricted domain for supply function. (3 p.)

e) Determine the revenue at the equilibrium price. (4 p.)

f) Determine the demand if price is 25$. (2 p.)