25 points	25 points	25 points	25 points	100 points
1	2	3	4	**Total**

MATH 102 CALCULUS II 13.05.2011

İzmir University of Economics Faculty of Arts and Sciences, Department of Mathematics

FIRST MIDTERM EXAM

Student Name and Department: . . . . . .

Section: **Check for your instructor and course program below:**

- ☐ Halil ORUÇ, Friday 08:30 – 11:20
- ☐ Halil ORUÇ, Friday 12:30-15:20
- ☐ Gökhan BİLHAN,Wednesday,8:30-11:20
- ☐ Gökhan BİLHAN,Wednesday,12:30-15:20
- ☐ İbrahim Çanak, Thursday 8:30-11:20, Tues. 12:30-15:20
- ☐ Ilgın SAĞER, Monday, 08:30–11:20, 12:30–15:20
- ☐ Ilgın SAĞER, Tuesday, 15:30–18:20
- ☐ Ilgın SAĞER, Wednesday, 12:30–15:20

Good Luck...

1. (7+8+10 pt) Evaluate the following integrals

(a) $\int \frac{x}{\sqrt{x+5}}\, dx = ?$

(b) $\int_1^e \ln(xe^{\sqrt{x}})\, dx = ?$

(c) $\int_0^2 \int_{x^2}^4 xe^{y^2}\, dydx = ?$

Solution:

2. (25pts) A firm produces two types of earphones per year: x thousand of type A and y thousand of type B. If the revenue and cost equations for the year are (in millions of dollars)

$$R(x, y) = 2x + 3yC(x, y) = x^2 - 2xy + 2y^2 + 6x - 9y + 5$$

determine how many of each type of earphone should be produced per year to maximize profit. What is the maximum profit?

Solution:

3. (25 pt)The region R is bounded by the graph of $y = \sqrt{x}$ and $y = x/2$. Evaluate

$$\int_R \int_{x^2} xe^{y^2}\, dA = ?$$

Solution:

4. (25 pt) Minimize $f(x, y) = x^2 + 2y^2$ subject to $ye^{x^2} - 1 = 0$