30 points	25 points	25 points	25 points	105 points
1	2	3	4	**Total**

MATH 102 CALCULUS II 03.06.2011

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

FINAL 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. (10+10+10 pt) Evaluate the following integrals

(a) $\displaystyle\int_0^{\pi} \sqrt[3]{\cos x}\,\sin x\,dx = ?$

(b) $\displaystyle\int_0^{\pi} x\cos x\,dx = ?$

(c) $\displaystyle\int_0^{2}\int_{x^2}^{4} \frac{4x}{1+y^2}\,dydx = ?$

SOLUTION:

2. (25pt) A manufacturing company in Manisa produces two models of an HDTV per week, x units of model A and y units of model B at a cost (in TL) of

$$C(x, y) = 6x^2 + 12y^2$$

if it is necessary (because of shipping considerations) that

$$x + y = 90$$

how many of each type of set should be manufactured per week to minimize cost? What is the minimum cost?

SOLUTION:

3. (25pt) First sketch graphs of the region then Find the volume of the solid under the graph of $f(x, y) = 4xy$ over the region bounded by the graphs of
$R = \{(x, y) : y = \sqrt{(1 - x^2)}, y = 0, 0 \leq x \leq 1\}$

SOLUTION:

4. (25pt) A rectangular box with no top and two intersecting partitions (see the figure) must hold a volume of 72 cubic inches. Find the dimensions that will require the least amount of material?

SOLUTION: