Project II Cover Sheet

This page must be stapled in front of your project

This part to be used by grader:
No. of correct problems: out of 9
Project Grade out of 10 pts.
Name:
Project Check List:
Answers are boxed
Formulas are boxed
Sketches are provided when required
Final answers in fraction form (not converted to decimals)
Project stapled together with first page cover sheet

Project II

In Project II you will work with:

1. The meaning of the gradient.

Problem 1: 11.6 # 34

2. Extrema problems: Usually, finding the critical points is the most critical step in extrema problems.

Problem 2: 11.7 # 18

Write the result in a table of the form	(x,y)	f_{xx}	f_{yy}	D	Classify
	•	•	•	•	•
	:	:	:	:	:
		-		-	-

3. Identifying type I and II regions and setting up the integrals right.

Problem 3: Sketch the region of integration, identify it as type I or type II (if it is both types indicate so) and evaluate

$$\iint_D (2y-x) \, dA$$

where D is the region bounded by $y = x^2$ and y = 2x.

Problem 4: Sketch the region of integration, identify it as type I or type II (if it is both types indicate so) and evaluate

$$\iint_D 18x \, dA$$

where D is the region bounded by $y = 4 - x^2$, y = 3x, and y = 0.

4. Understanding the value of polar coordinates: they help simplify certain integrals.

Problem 5: 12.3 # 36

Problem 6: 12.4 # 4

5. Setting up the limits of integration is the most important step in the triple integrals that you will have to evaluate.

Sketch the solid, the region of integration on the XY-plane and set up (but do not evaluate) a triple integral to express the volume of:

Problem 7: The solid enclosed by the plane 2x + y + z = 1 and the coordinate planes.

Problem 8: The solid bounded by the surface $z = 1 - x^2 - y^2$ and the plane z = 0. **Problem 9:** The solid bounded by the sphere $x^2 + y^2 + z^2 = 4$ and the parabolid $z = x^2 + y^2$.