

# Calculus II

## Assignment 7

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1. Evaluate the double integral by first identifying it as the volume of a solid.

$$\iint_R (5 - x) dA, \quad R = \{(x, y) | 0 \leq x \leq 5, 0 \leq y \leq 3\}$$

2. Calculate the iterated integral.

(a)  $\int_0^1 \int_1^2 (4x^3 - 9x^2y^2) dy dx$

(b)  $\int_0^1 \int_{2x}^2 (x - y) dy dx$

3. Calculate the double integral.

(a)  $\iint_R \sin(x - y) dA, \quad R = \{(x, y) | 0 \leq x \leq \pi/2, 0 \leq y \leq \pi/2\}$

(b)  $\iint_D x dA, \quad D = \{(x, y) | 0 \leq x \leq \pi, 0 \leq y \leq \sin x\}$

4. Evaluate the integral by reversing the order of integration.

$$\int_0^{\sqrt{\pi}} \int_y^{\sqrt{\pi}} \cos(x^2) dx dy$$

5. Evaluate the given integral by changing to polar coordinates.

$$\iint_D x^2 y dA, \text{ where } D \text{ is the top half of the disk with center the origin and radius } 5.$$

Reading materials : Textbook Section 16.1~16.5.