

Quiz for lecture 12

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Section: 8:40-10:00 A.M.

1. Calculate the iterated integral

$$\int_1^2 \int_{-1}^1 (x+y^2) dx dy$$

$$\circ \int_{-1}^1 (x+y^2) dx$$

$$= \left[ \frac{x^2}{2} + xy^2 \right]_{-1}^1$$

$$= \frac{1}{2} + y^2 - \frac{1}{2} + y^2$$

$$= 2y^2$$

$$\int_1^2 \int_{-1}^1 (x+y^2) dx dy$$

$$= \int_1^2 2y^2 dy$$

$$= \left[ \frac{2y^3}{3} \right]_1^2$$

$$= \frac{16}{3} - \frac{2}{3}$$

$$= \frac{14}{3}$$



2. Calculate the double integral

$$\iint_R \frac{x^2 y}{x^3 + 1} dA$$

$$R = \{ (x, y) \mid 0 \leq x \leq 1, -1 \leq y \leq 1 \}$$

$$\int_0^1 \int_{-1}^1 \frac{x^2 y}{x^3 + 1} dy dx$$

$$\int_{-1}^1 \frac{x^2 y}{x^3 + 1} dy$$

$$= \left[ \frac{x^2}{x^3 + 1} \cdot \frac{y^2}{2} \right]_{-1}^1$$

$$= \frac{1}{2} \cdot \frac{x^2}{x^3 + 1} - \frac{1}{2} \cdot \frac{x^2}{x^3 + 1}$$

$$= 0$$

$$\int_0^1 0 dx$$

$$= 0.$$

