

"QUIZ" for Lecture 12

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E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q12FirstLast.pdf) ASAP BUT NO LATER THAN Oct. 19 8:00pm

1. Calculate the iterated integral

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

$$= \left. \frac{1}{2} x^2 + x y^2 \right|_{-1}^1 = \left( \frac{1}{2} + y^2 \right) - \left( \frac{1}{2} - y^2 \right) = 2y^2$$

$$\int_1^2 2y^2 dy = \left. \frac{2}{3} y^3 \right|_1^2 = \frac{16}{3} - \frac{2}{3} = \boxed{\frac{14}{3}}$$

2. Calculate the double integral

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

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

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

$$= \left. \frac{y \ln(|x^3 + 1|)}{3} \right|_0^1 = \frac{y \ln|2|}{3} - \frac{y \ln|1|}{3}$$

$$\int_{-1}^1 \frac{y \ln|2|}{3} = \left. \frac{y^2 \ln|2|}{6} \right|_{-1}^1 = \frac{(1)^2 \ln|2|}{6} - \frac{(-1)^2 \ln|2|}{6} = \boxed{0}$$