

"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

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

inner (wrt x  $\rightarrow \int_{-1}^1 (x + y^2) dx = \frac{x^2}{2} + y^2 x + C \Big|_{-1}^1 = 2y^2$

outer (wrt y  $\rightarrow \int_1^2 2y^2 dy = \frac{2y^3}{3} + C \Big|_1^2 = \boxed{\frac{14}{3}}$

2. Calculate the double integral

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

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

$\int_0^1 \int_{-1}^1 \frac{x^2 y}{x^3 + 1} dy dx \rightarrow \frac{x^2}{x^3 + 1} \int y dy \rightarrow \frac{x^2 y^2}{2(x^3 + 1)} + C \Big|_{-1}^1 = 0$

*does not work b/c wrty = 0*

(outer)  $\int_{-1}^1 \int_0^1 \frac{x^2 y}{x^3 + 1} dx dy \rightarrow \frac{y}{3} \int \frac{1}{v} dv \rightarrow \frac{y \ln(x^3 + 1)}{3} + C \Big|_0^1 = \frac{\ln(2)y}{3}$

$\int_{-1}^1 \frac{\ln(2)y}{3} dy \rightarrow \frac{\ln(2)}{3} \int y dy \rightarrow \frac{\ln(2)y^2}{6} + C \Big|_{-1}^1 = 0 \rightarrow$  ans for was correct, but we made sure!