

"QUIZ" for Lecture 12

NAME: (print!) _____ Section: _____

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

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

$$\begin{aligned} & \int_{-1}^1 (x + y^2) dx \\ &= \left. \frac{x^2}{2} + y^2 x \right|_{-1}^1 \\ &= \frac{1}{2} + y^2 - \left(\frac{1}{2} + y^2 \right) \\ &= 2y^2 \end{aligned}$$

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

2. Calculate the double integral

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

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

$$\begin{aligned} & \int \frac{x^2 y}{x^3 + 1} dA \\ &= y \left. \frac{1}{3} \ln|1 + x^3| \right|_0^1 \\ &= \frac{1}{3} y \ln|2| \end{aligned}$$

$$\begin{aligned} & \int_{-1}^1 \frac{1}{3} y \ln|2| \\ &= \left. \frac{1}{6} \ln|2| y^2 \right|_{-1}^1 \\ &= \frac{\ln 2}{6} - \frac{\ln 2}{6} \\ &= 0 \end{aligned}$$