

"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

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

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

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

$$\left[ \frac{1}{2} + y^2 \right] - \left[ \frac{1}{2} - y^2 \right]$$

$$2y^2$$

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

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

$$\frac{2}{3} (8) - \frac{2}{3}$$

$$\frac{2}{3} (7) = \underline{\underline{\frac{14}{3}}}$$

2. Calculate the double integral

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

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

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

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

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

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

$$\int_0^1 \frac{x^2}{x^3 + 1} dx$$

$$\int_1^2 \frac{u}{3} du$$

$$x^3 + 1 = u$$

$$3x^2 dx = du$$

$$x^2 dx = \frac{du}{3}$$

$$\left[ \frac{u^2}{6} \right]_1^2 = \frac{4}{6} - \frac{1}{6} = \frac{3}{6}$$

$$= 1/2$$