

"QUIZ" for Lecture 14

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E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q14FirstLast.pdf) ASAP BUT NO LATER THAN Oct. 26, 8:00pm

1. Evaluate the iterated integral

$$\int_0^1 \int_x^{3x} \int_0^y x^2 y z \, dz \, dy \, dx$$
$$\int_0^1 x^2 y z \, dz = \int_x^{3x} \frac{x^2 y^3}{2} \, dy = \int_0^1 10x^6 \, dx = \frac{10x^7}{7} \Big|_0^1 = \boxed{\frac{10}{7}}$$

2. Evaluate the triple integral

$$\iiint_E yz \ln(x^5) \, dV$$

where

$$E = \{(x, y, z) \mid 0 \leq x \leq 1, 0 \leq y \leq x, 2x \leq z \leq 3x\}$$

$$\int_0^1 \int_0^x \int_{2x}^{3x} yz \ln(x^5) \, dz \, dy \, dx = \int_0^1 \int_0^x \frac{25x^2 \ln(x) y}{2} \, dy \, dx = \int_0^1 \frac{25x^4 \ln(x)}{4} \, dx$$

$$= \boxed{-\frac{1}{4}}$$