

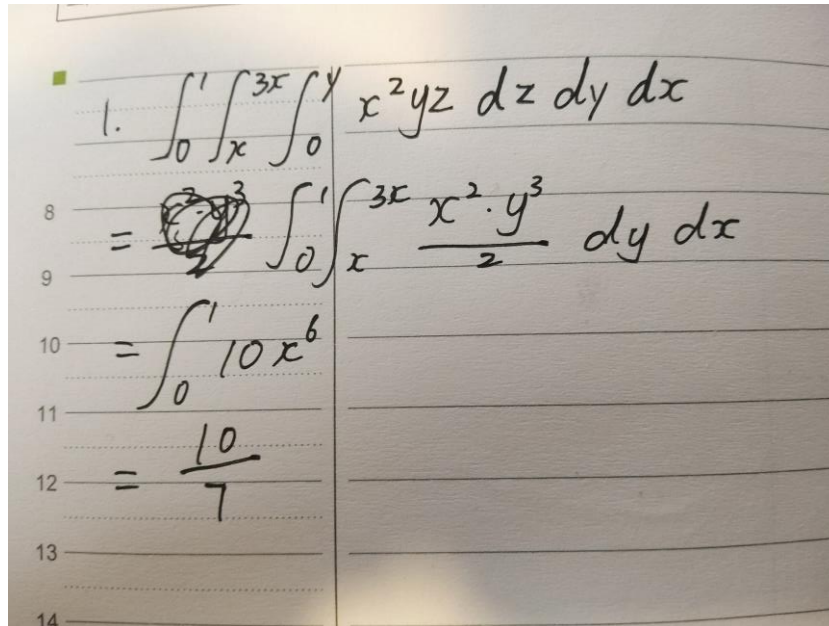
"QUIZ" for Lecture 14

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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

$$\int_0^1 \int_x^{3x} \int_0^y x^2 y z \, dz \, dy \, dx .$$



Handwritten solution for problem 1:

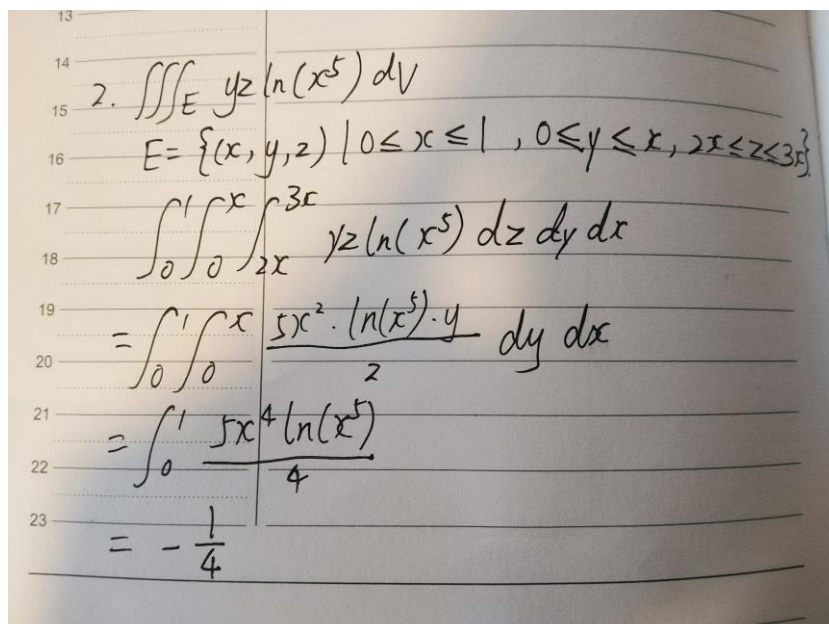
$$\begin{aligned} 1. & \int_0^1 \int_x^{3x} \int_0^y x^2 y z \, dz \, dy \, dx \\ &= \int_0^1 \int_x^{3x} \frac{x^2 \cdot y^3}{2} \, dy \, dx \\ &= \int_0^1 10x^6 \, dx \\ &= \frac{10}{7} \end{aligned}$$

2. Evaluate the triple integral

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

where

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



Handwritten solution for problem 2:

$$\begin{aligned} 2. & \iiint_E yz \ln(x^5) \, dV \\ E &= \{(x, y, z) \mid 0 \leq x \leq 1, 0 \leq y \leq x, 2x \leq z \leq 3x\} \\ &= \int_0^1 \int_0^x \int_{2x}^{3x} yz \ln(x^5) \, dz \, dy \, dx \\ &= \int_0^1 \int_0^x \frac{5x^2 \cdot \ln(x^5) \cdot y}{2} \, dy \, dx \\ &= \int_0^1 \frac{5x^4 \ln(x^5)}{4} \, dx \\ &= -\frac{1}{4} \end{aligned}$$