

"QUIZ" for Lecture 13

NAME: (print!) Shaun Goda Section: 23

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q13FirstLast.pdf) ASAP BUT NO LATER THAN Oct. 22, 8:00pm

1. Change the order of integration in

$$\int_1^4 \int_0^{\ln y} f(x, y) dx dy$$

$$0 \leq x \leq \ln y$$

$$1 \leq y \leq 4 \quad \Rightarrow \quad 0 \leq x \leq \ln 4$$

$$1 \leq y \leq e^x$$

$$\int_0^{\ln 4} \int_1^{e^x} f(x, y) dy dx$$

2. Evaluate

$$\int_0^2 \int_{y/2}^1 \frac{1}{(x^2+1)^2} dx dy$$

by inverting the order of integration and evaluating the new iterated integral.

$$\int_0^1 \int_0^{2x} \frac{1}{(x^2+1)^2} dy dx \Rightarrow \int_0^1 \left. \frac{y}{(x^2+1)^2} \right|_0^{2x} = \frac{2x}{(x^2+1)^2}$$

$$\int_0^1 \frac{2x}{(x^2+1)^2} dx = \int_0^1 \frac{1}{u^2} du = \left. -\frac{1}{x^2+1} \right|_0^1$$

$$u = x^2 + 1$$

$$dx = 2x du$$

$$= \boxed{\frac{1}{2}}$$