

Quiz for lecture 13.

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Section: 8:40 - 10:00 A.M.

1. Change the order of integration in
$$\int_1^4 \int_0^{\ln y} f(x, y) dx dy$$

$$D = \{(x, y) \mid 1 \leq y \leq 4, 0 \leq x \leq \ln y\}$$

$$D = \{(x, y) \mid 0 \leq x \leq \ln 4, 1 \leq y \leq e^x\}$$

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

2. Evaluate

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

by inverting the order of integration and evaluate the new ~~int~~ iterated integral.

$$D = \{(x, y) \mid 0 \leq y \leq 2, \frac{y}{2} \leq x \leq 1\}$$

$$D = \{(x, y) \mid 0 \leq x \leq 1, 0 \leq y \leq 2x\}$$

$$\int_0^1 \int_0^{2x} \frac{1}{(x^2+1)^2} dy dx.$$

$$= \int_0^1 \frac{2x}{(x^2+1)^2} dx.$$

$$= \left[-\frac{1}{x^2+1} \right]_0^1$$

$$= -\frac{1}{2} + 1$$

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

