

Practice for Quiz 11
Math 2580
Spring 2016

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February 25th, 2016

If you can answer the following problems, you should be well-prepared for Quiz 11:

1. Evaluate the following iterated integrals:

(a) $\int_0^2 \int_0^3 x^2 y^3 \, dx \, dy$

(c) $\int_{-1}^1 \int_0^3 y^5 e^{xy^3} \, dx \, dy$

(b) $\int_{-1}^1 \int_0^2 x^2 y \sin(y^2) \, dx \, dy$
(Hint: symmetry)

(d) $\int_0^\pi \int_{-\pi/2}^{\pi/2} \sin(x+y) \, dx \, dy$

2. Evaluate the following integrals over the given region D :

(a) $\iint_D x^3 y^2 \, dA$, where $D = \{(x, y) | 0 \leq x \leq 2, -x \leq y \leq x\}$.

(b) $\iint_D (1 - \sin(\pi x)) \, dA$, where D is the region bounded by the lines $y = x$, $y = 0$, and $x = 1$.

3. For each of the iterated integrals below, (i) sketch the region of integration, and (ii) evaluate the integral.

(a) $\int_0^\pi \int_{\sin x}^{3 \sin x} x(1+y) \, dy \, dx.$

(b) $\int_0^1 \int_0^{x^2} (x^2 + xy - y^2) \, dy \, dx.$

4. For each of the iterated integrals below, (i) sketch the region of integration, (ii) change the order of integration, and (iii) evaluate the integral.

(a) $\int_0^1 \int_0^x xy \, dy \, dx$

(c) $\int_0^1 \int_{3y}^3 e^{x^2} \, dx \, dy$

(b) $\int_0^1 \int_{1-y}^1 (x+y^2) \, dx \, dy$

(d) $\int_0^1 \int_{x^2}^1 x^3 \sin(y^3) \, dy \, dx$