

Name _____

Homework 6
Sections 16.1–16.4

1. (2ea) Sketch the region of integration for the following integrals

(a) $\int_0^5 \int_{-2}^{x+1} (x^2 + y^2) \, dy \, dx$

(b) $\int_0^3 \int_{y+1}^4 \sin(xy) \, dx \, dy$

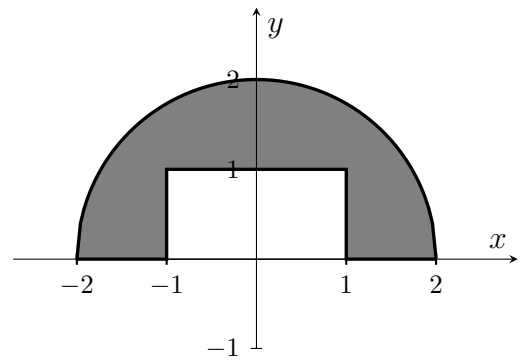
(c) $\int_2^4 \int_{\pi/2}^{5\pi/4} (r^2 + 1)r \, d\theta \, dr$

(d) $\int_0^{\pi/4} \int_0^{1/\cos \theta} \sin \theta \, r \, dr \, d\theta$

2. (4) Evaluate the integral $\int_T 2xy \, dy \, dx$, where T is the triangle with vertices $(1, 1)$, $(2, 0)$, and $(2, 2)$.

3. (4) Evaluate the integral $\int_0^1 \int_{2x}^2 4e^{y^2} \, dy \, dx$.

4. (5) Compute $\int_R 15x^2y \, dA$ where R is the shaded region shown below.



5. (4) Evaluate $\int_{-2\sqrt{2}}^{2\sqrt{2}} \int_{|x|}^{\sqrt{16-x^2}} \frac{x^2}{x^2+y^2} dy dx.$