

Math 16C  
Kouba  
Worksheet 7

1.) Evaluate the following double integrals. Realize that in some cases you must switch the order of integration before you compute the antiderivatives.

a.)  $\int_0^{\pi/2} \int_0^{\pi/2} \sin x \cos y \, dx \, dy$

b.)  $\int_0^{2\pi} \int_0^{\pi} \cos(x/4 + y/3) \, dy \, dx$

c.)  $\int_0^1 \int_0^{\sqrt{x}} y \cdot \sin(\pi x) \, dy \, dx$

d.)  $\int_0^{\pi} \int_x^{\pi} \frac{\sin y}{y} \, dy \, dx$

e.)  $\int_0^{2\sqrt{\pi}} \int_{y/2}^{\sqrt{\pi}} \sin(x^2) \, dx \, dy$

2.) Compute the volume of the solid which lies *between* the two surfaces (draw a rough sketch)  $z = x^2 + y^2 + 10$  and  $x + 2y + 3z = 6$  and *above* the region  $R$  in the  $xy$ -plane bounded by the graphs of  $y = 2x$  and  $y = x^2$ .

3.) Compute the volume of the solid which is bounded by the planes  $x = 0$ ,  $y = 0$ ,  $z = 0$ , and  $3x + 3y + 5z = 15$ .