Box #_____
Math 60 Section 1
Homework 9
25 May 2018

Collaborators:

Colley 5.4 #4 Find the value of

$$\int\int\int_W z\,dV,$$

where $W = [-1,2] \times [2,5] \times [-3,3]$, without resorting to explicit calculation.

■

Colley 5.4 #5 Evaluate

$$\int_{-1}^{2}\int_{1}^{z^2}\int_{0}^{y+z} 3yz^2\,dx\,dy\,dz.$$

■

Colley 5.4 #18 Integrate

$$f(x, y, z) = z$$

over W, where W is the region bounded by $z = 0$, $x^2 + 4y^2 = 4$, and $z = x + 2$.

■

Colley 5.4 #29(a),(b) Consider the iterated integral

$$\int_{-2}^{2}\int_{0}^{\frac{1}{2}\sqrt{4-x^2}}\int_{x^2+3y^2}^{4-y^2}(x^3+y^3)\,dz\,dy\,dx.$$

(a) This integral is equal to a triple integral over a solid region W in $\mathbb{R}^3$. Describe W.

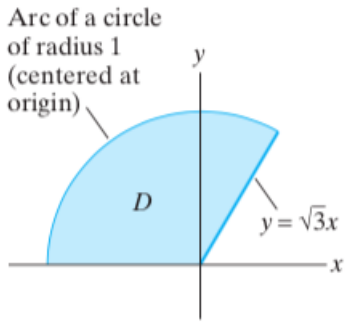
(b) Set up an equivalent iterated integral by integrating first with respect to z, then with respect to x, then with respect to y. Do not evaluate your answer.

■

Colley 5.5 #25 Evaluate

$$\int\int_D \cos(x^2 + y^2)\, dA,$$

where D is the shaded region in the following figure.



■

Colley 5.5 #31 Determine

$$\int\int\int_W (x^2 + y^2 + 2z^2)\, dV,$$

where W is the solid cylinder defined by the inequalities $x^2 + y^2 \leq 4$, $-1 \leq z \leq 2$.

■

Colley 5.5 #34 Determine the value of

$$\int\int\int_W \frac{dV}{\sqrt{x^2+y^2+z^2}},$$

where W is the region bounded by the two spheres $x^2+y^2+z^2=a^2$ and $x^2+y^2+z^2=b^2$, for $0<a<b$.

■

Colley 5.5 #38 Determine

$$\int\int\int_W (2+\sqrt{x^2+y^2})\,dV,$$

where $W = \left\{(x,y,z)|\sqrt{x^2+y^2} \leq z/2 \leq 3\right\}$.

■