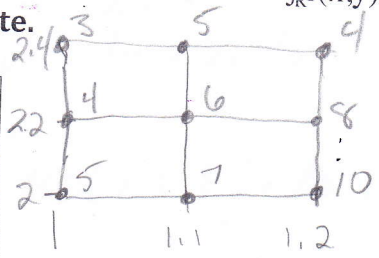
MAC 2313
Calculus III

Quiz 7

Name DeVoe

3 1. Values of f(x,y) are in the table below. Let R be the rectangle $1 \le x \le 1.2, 2 \le y \le 2.4$. Find the Riemann sum which is a reasonable over estimate for $\int_R f(x,y)\,dA$ with $\Delta x=0.1$ and $\Delta y=0.2$. **Show what you calculate.**

		x		
		1.0	1.1	1.2
y	2.0	5	7	10
	2.2	4	6	8
	2.4	3	5	4



$7(.1)(.2) + 10(.1)(.2) + 6(.1)(.2) + 8(.1)(.2)$

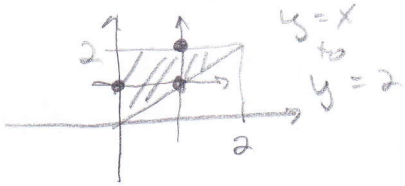
$= (7+10+6+8) = 31(.02) = .62$

2 2. Referring to the problem above, if R is a rectangular plate, x and y are distances measured in millimeters and f(x,y) is the density of bacteria per square millimeter what would the integral represent?

$f(x,y)\frac{\text{bacteria}}{mm^2}\,(mm^2) = \text{Total Bacteria}$

2 3. Make a sketch of the integration region and switch the limits of integration in the following double integral. **You do not need to evaluate the integral**, just switch the limits.

$\int_0^2 \int_x^2 x^2\,dy\,dx$ = $\int_0^2 \int_0^y x^2\,dx\,dy$



3 4 Sketch and describe the region of integration for the triple integral given by

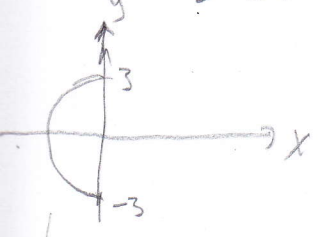
$\int_{-3}^{3} \int_{-\sqrt{9-y^2}}^{0} \int_{-\sqrt{9-x^2-y^2}}^{\sqrt{9-x^2-y^2}} f(x,yz)\,dz\,dx\,dy$

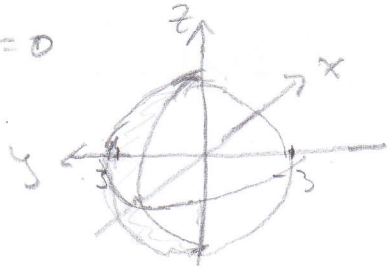
Make sure you are clear on your picture and description.

z => from $-\sqrt{\quad}$ to $\sqrt{\quad}$ bottom of sphere to top sphere

$x = -\sqrt{9-y^2}$ to $x=0$

back half of a sphere radius 3





negative x to $x=0$