Math 53, Discussions 116 and 118 **2022-10-26**

More triple integrals, and cylindrical

Questions

Question 1. Write (but do not evaluate) a triple integral for the volume of the region bounded by the planes $y = 0, z = 0, x + y = 2$ and the cylinder $y^2 + z^2 = 1$ in the first octant.

Question 2. Express (but do not evaluate) the following triple integral in cylindrical coordinates.

$$\int_{-1}^{1} \int_{0}^{\sqrt{1-y^2}} \int_{0}^{9-x^2-y^2} \sqrt{x^2 + y^2}\, \mathrm{d}z\, \mathrm{d}x\, \mathrm{d}y.$$

HW problems

Here are a couple of problems from the current assigned homework. Consider if you'd be willing to present a solution to one of them at the board!

Problem (§15.6 #13)**.** Compute $\iiint_E 6xy\, \mathrm{d}V$ where E lies under the plane $z = 1 + x + y$ and above the region in the xy-plane bounded by the curves $y = \sqrt{x}, y = 0, x = 1$.

Problem (§15.6 #19)**.** Use a triple integral to find the volume of the tetrahedron enclosed by the coordinate planes and the plane $2x + y + z = 4$.