Math 2X03 - Homework 2

Due: May 17, 2018 (by 10:00 pm)

(The following problems are from the textbook.)

1. (§15.6 #16) Evaluate the triple integral $\iiint_T xz dV$, where T is the solid tetrahedron with vertices $(0,0,0)$, $(1,0,1)$, $(0,1,1)$, and $(0,0,1)$.

2. (§15.7 #20) Evaluate $\iiint_E (x-y) dV$, where E is the solid that lies between the cylinders $x^2+y^2=1$ and $x^2+y^2=16$, above the xy-plane, and below the plane $z=y+4$.

3. (§15.8 #26) Evaluate $\iiint_E \sqrt{x^2+y^2+z^2} dV$, where E lies above the cone $z=\sqrt{x^2+y^2}$ and between the spheres $x^2+y^2+z^2=1$ and $x^2+y^2+z^2=4$.

4. (§15.8 #22) Evaluate $\iiint_E y^2 z^2 dV$, where E lies above the cone $\phi=\pi/3$ and below the sphere $\rho=1$.

5. (§15.9 #16) Use the given transformation to evaluate the double integral $\iint_R (4x+8y) dA$, where R is the parallelogram with vertices $(-1,3)$, $(1,-3)$, $(3,-1)$, and $(1,5)$; $x=\frac{1}{4}(u+v)$, $y=\frac{1}{4}(v-3u)$.