Binghamton University | Spring 2020
Math 323 | Quiz 7

1. Evaluate $\iiint_E \frac{z}{y^2+z^2}\, dV$ where $E = \{(x,y,z) : 1 \le x \le 4, x \le z \le 4,\ 0 \le y \le z\}$.
2. Evaluate $\iiint_E z\, dV$ where E is bounded by the cylinder $y^2 + z^2 = 9$ and the planes $x = 0,\ y = 3x,\ z = 0$ and $z = 3x$ in the first octant.
3. Use a triple integral to find the volume of the solid enclosed by the cylinder $y = x^2$ and the planes $z = 0$ and $y + z = 1$.
4. Express the volume of the wedge in the first octant that is cut from the cylinder $y^2 + z^2 = 1$ by the planes $y = x/3$ and $y = 3x$ as a triple integral.
5. Find the volume of the solid that is inside $x^2 + y^2 + z^2 = 2$ but outside of $z^2 = x^2 + y^2$.
6. Find the volume of the region E that lies between the paraboloid $z = 24 - x^2 - y^2$ and the cone $z = 2\sqrt{x^2 + y^2}$.
7. Find the volume of the solid that the cylinder $r = a\cos\theta$ cuts out of the sphere of radius a centered at the origin.