

Written HW8 – MATH 3503 Fall 2022

For each of these problems, make sure you draw or use a computer to visualize the region of integration. Use words to describe the region if you have to — whatever is necessary to be clear! I want to see the region of integration and the “shadow region” in your submission.

1. Set up **but do not evaluate** the integral $\iiint_E e^{xy} dV$ as a $dx dy dz$ integral, where E is the tetrahedron bounded by the planes $x = 0$, $y = 0$, $z = 0$, and $2x + y + z = 4$.
2. Set up **but do not evaluate** the integral $\iiint_E y dV$ as a $dz dA$ (you choose how to do the dA) where E is the region bounded by the cylinder $x^2 + y^2 = 9$ and the planes $y + z = 5$ and $z = 1$.
3. Set up **and evaluate** the integral $\iiint_E xyz dV$ as a $dz dx dy$ integral where E is the region bounded by the parabolic cylinder $z = 1 - y^2$ and the planes $x + z = 1$, $x = 0$, and $z = 0$.