Math 259 – Quiz 4 – Fall 2022 ‖ 25 POINTS ‖ 20 MINUTES

Instructions: Show all work. No collaboration or references.
No computational devices allowed without instructor permission.

Print Name _____

1. (3 pts) Evaluate the triple integral $\iiint_E 4xz \; dV$ where E is the box $[0,3] \times [2,5] \times [0,2]$.

2. (7 pts) Consider the region E bounded by planes: $x = 0$, $y = 0$, $z = 0$, and $x + 4y + 3z = 12$. Write the integral $\iiint_E f(x,y,z) \; dV$ with order of integration specified: $\int_?^? \int_?^? \int_?^? f(x,y,z) \; dy \; dx \; dz$. (Find the integration limits.)

3. (9 pts) Write the triple integral $\iiint_E yz \, dV$ in spherical coordinates where E is the region given by $4 \leq x^2 + y^2 + z^2 \leq 9$, $y \leq 0$, and $z \geq 0$. Do not evaluate the integral.

4. (6 pts) Integrate the function $f(x, y) = x + 2y$ over the line segment connecting points $(5, 1)$ to $(3, 4)$.