MTH241 Fall 2024: Quiz 09

Name:

UID:

Closed book, no calculator, show your work clearly.

1. (`5pt`) Evaluate $\iiint_D 1dV$ to find the volume of D that is the solid region between the two spheres $x^2 + y^2 + z^2 = 2az$ and $x^2 + y^2 + z^2 = az$. (Grading: 2pt working; 2pt for iterate integral; 1pt for volume)

2. (`5pt`) Find the surface area of the portion of the cone $z = \sqrt{x^2 + y^2}$ that is inside the sphere $x^2 + y^2 + z^2 = 2$. Hint: Let $x = u\cos v, y = u\sin v$ what is the ranges of u and v? (Grading: 2pt working; 2pt for the area formula, 2pt for the correct area)

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