

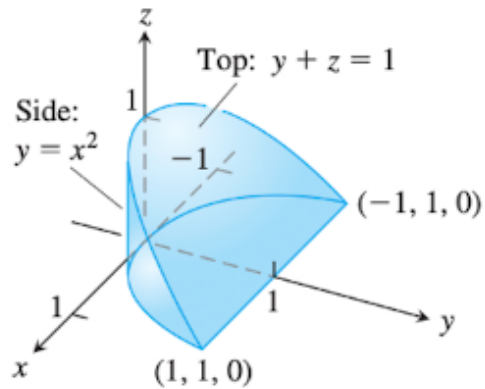
Quiz 5

Be sure to follow the quiz instructions in order to avoid a deduction in points. Submissions are due in Gradescope by 11:59pm on Friday; no late work is accepted.

Name:

Question #1: The triple integral evaluates to the volume of the region D pictured below. First (a) rewrite the triple integral in the order $dx dz dy$, and then (b) evaluate the expression from part (a).

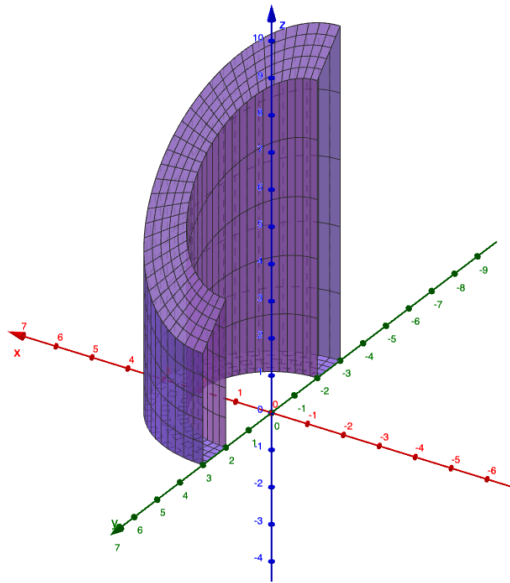
$$\text{Vol} = \int_{-1}^1 \int_{x^2}^1 \int_0^{1-y} 1 \, dz \, dy \, dx$$



(a) Vol=

(b) Vol=

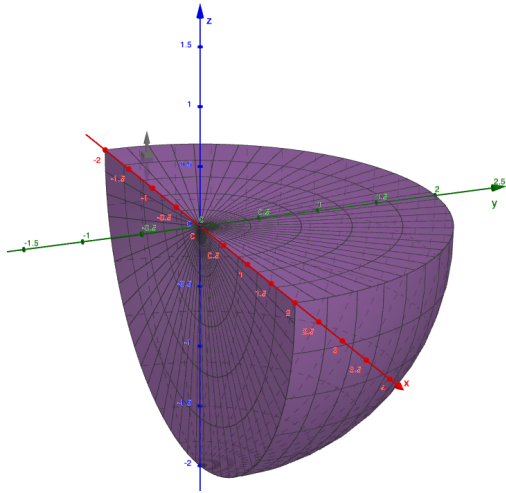
Question #2: Find the mass of the solid D pictured below, which occupies the region with base R the annulus $4 \leq x^2 + y^2 \leq 9$ **with** $x \geq 0$ in the xy -plane and with top cap the plane $y + z = 6$. First (a) write a triple integral in cylindrical coordinates which computes the mass of D given the density function $\delta(x, y, z) = 4\sqrt{x^2 + y^2}$ in the order $dz \, dr \, d\theta$, and then (b) evaluate the expression from part (a).



(a) mass=

(b) mass=

Question #3: Find the mass of the solid D pictured below, which occupies the region which is the right-half of the lower-half of the sphere of radius $\rho = 2$ with $y \geq 0$ and $z \leq 0$. First (a) write a triple integral in spherical coordinates which computes the mass of D given the density function $\delta(x, y, z) = -z$ in the order $d\phi d\rho d\theta$, and then (b) evaluate the expression from part (a).



(a) mass=

(b) mass=