

Read each question carefully and be sure to SHOW ALL WORK. Correct answer without proper justification will not receive a “Complete” grade. Pac fat! Good luck!

Name: _____

LO 9. Volume and Mass/Weight [CORE]. I can use the divide and conquer strategy to find the volume, mass or weight of an object.

Criteria for Success: I can

- use the divide and conquer method to slice a shape, find the volume or mass/weight of a general slice using similar figures, or the Pythagorean Theorem, and setup the corresponding Riemann sum and definite integral
- use the divide and conquer method to slice a shape of revolution, find the volume of a general slice by discs/washers or tubes/shells, and setup the corresponding Riemann sum and definite integral

Question: Suppose a pyramid of height 0.8 m and rectangular base of dimensions 0.4 m by 0.2 m has a density of material varying height-wise given by $\rho(y) = \frac{y^2}{y+1}$ kg/m³, where y is the height in meters. See <https://www.desmos.com/calculator/voomactqjg> for a visual. What is the mass of the pyramid? Show work by filling out the information below. **Setup but do not solve the answer involving a definite integral.**

Mass of slice:

Riemann Sum:

Sketch of slice:

Definite Integral: