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

Name: _____

LO 7. Arclength and Surface Area. I can use the divide and conquer strategy to find arclengths and surface areas.

Criteria for Success: I can

- use the divide and conquer method to slice a path/shape, find the arclength/surface area of a general slice, and setup the corresponding Riemann sum and definite integral
- solve questions related to computing arclengths both using Cartesian and parametric equations
- solve questions related to computing surface areas of revolved graphs about some line

Question: What is the surface area formed by rotating the function $y = x^{1/3}$ on $[0, 8]$ around the line $x = 8$. **Setup but do not solve the answer involving a definite integral.**

Surface area of slice:

Riemann Sum:

Sketch of slice:

Definite Integral:

LO 10. Divide and Conquer Applications Challenge. I can analyze the divide and conquer strategy in a variety of applications including area, average value, arclength, surface area, work, volume, mass/weight and center of mass by the divide and conquer strategy.

Criteria for Success: I can solve conceptual questions related to arclength, surface area, volume, work, and center of mass that lie on the top half of Bloom's Taxonomy (analyze, evaluate, and create).

Question: Create a continous graph whose average value on the interval $[0, 5]$ is -3 and passes through the origin and the point $(5, 0)$.