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 8. Work. I can use the divide and conquer strategy to find work.

Criteria for Success: I can

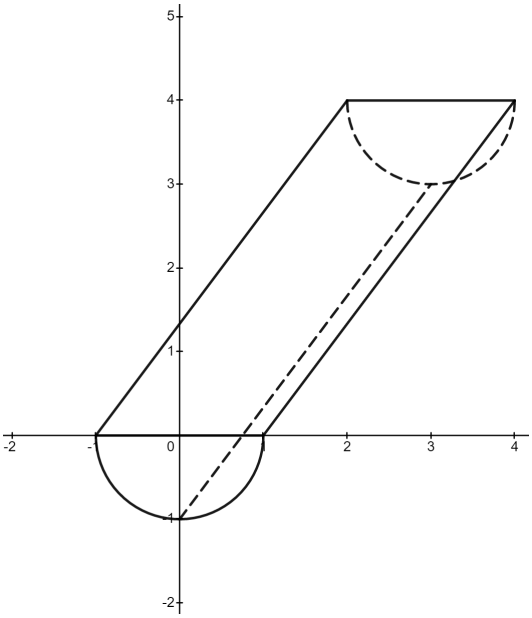
- use the divide and conquer method to split the work process into small parts, find the work of a general part, and setup the corresponding Riemann sum and definite integral
- solve questions related to computing work, including questions that require the use of similar figures, and Pythagorean Theorem.

Question: A trough is 5 meters long, 2 meters wide, and 1 meters deep. The vertical cross-section of the trough parallel to an end is shaped like the bottom half of a circle of radius 1. The trough is full of water (density 1000 kg/m^3). Find the amount of work in joules required to empty the trough by pumping the water over the top. (Note: Use $g = 9.8$ m/s^2 as the acceleration due to gravity.) For a visual see: `https://www.desmos.com/calculator/lukqbdzjbm` **Setup but do not solve the definite integral.**

Work for slice:

Riemann Sum:

Sketch of slice:



Definite Integral:

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: A trough is 5 meters long, 2 meters wide, and 1 meters deep. The vertical cross-section of the trough parallel to an end is shaped like the bottom half of a circle of radius 1. The trough is full of water (density 1000 kg/m^3). Find the mass of the water in the trough. (Note: Use $g = 9.8$ m/s^2 as the acceleration due to gravity.) For a visual see: `https://www.desmos.com/calculator/lukqbdzjbm` **Setup but do not solve the definite integral.**

Mass of slice:

Riemann Sum:

Sketch of slice:

Definite Integral: