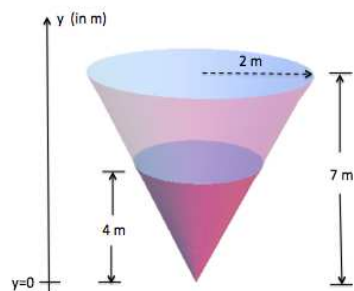


7. [9 points] A tank has the shape of a circular cone. The cone has radius 2 m and height 7 m (as shown below). The tank contains a liquid up to a depth of 4 m. The density of the liquid is $\delta(y) = 1100 - y^2$ kg/m³, where y measures the distance in meters from the bottom of the tank. Use the value $g = 9.8$ m/s² for the acceleration due to gravity.

- a. [6 points] Find a definite integral that computes the mass of the liquid in the tank. Show all your work.



- b. [3 points] Find a definite integral that computes the work required to pump the liquid 2 meters above the top of the tank. Show all your work.