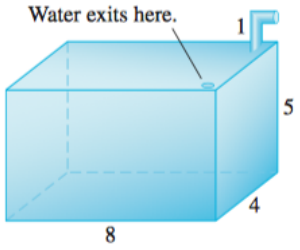
§6.5 (WORK AND ENERGY) NAME: _____

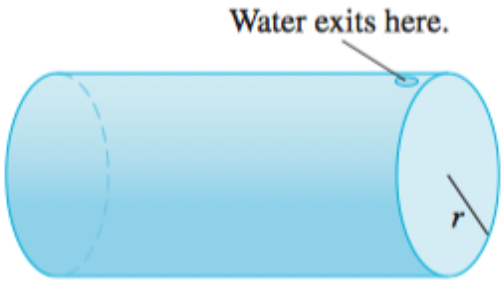
9 July 2018

(1) Calculate the work (in Joules) required to pump all of the water out of a full tank with the shape described. Distances are in meters, and the density of water is 1000 kg/m^3.

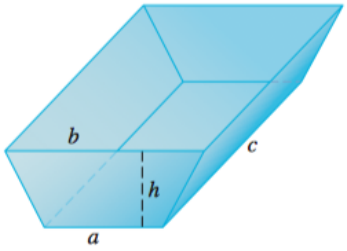
(a) A rectangular tank, with water exiting from a small hole in the top.



(b) A horizontal cylinder of length ℓ, where water exits from a small hole in the top.



(c) A trough as in the picture, where the water exits by pouring over the sides.



(2) Calculate the work required to lift a 6 meter chain with mass 18 kg over the side of a building.

(3) A 3 meter chain with mass density $\rho(x) = 2x(4-x)$ kg/m lies on the ground. Calculate the work required to lift the chain from the front end so that its bottom is 2 meters above the ground.