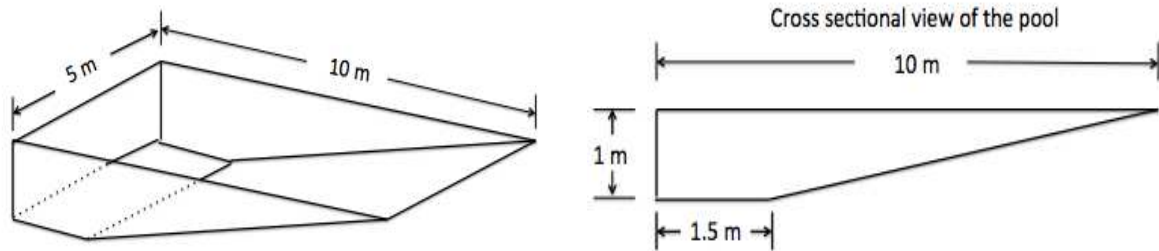


6. [11 points] A swimming pool 10 m long and 5 m wide has varying depth. Its maximum depth is 1 m as shown in the picture below



The swimming pool has water up to a level of maximum depth of 0.6 m. The density of water is 1000 kg per m^3 . Use $g = 9.8 \text{ m/s}^2$ for the acceleration due to gravity.

- a. [9 points] Write an expression that approximates the work done in lifting a horizontal slice of water with thickness Δy meters, that is at a distance of y meters above the bottom, to the top of the swimming pool.



- b. [2 points] Write a definite integral that computes the work required to pump all the water to the top of the pool.

