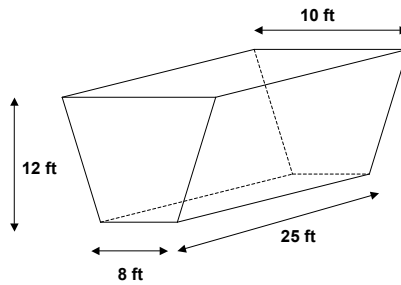


6. [12 points] The dimensions of a large in-ground reservoir are shown in the figure below. (The ends of the reservoir are trapezoids.) The top of the reservoir is at ground level. Currently, water fills the bottom 9 feet of the reservoir. Recall that the density of water is  $62.4 \text{ lb/ft}^3$ .



- a. [6 points] Write an expression that approximates the work done in lifting a horizontal slice of water that is  $y_i$  feet below ground level to the ground's surface, given that the depth of the slice is  $\Delta y$ . Include appropriate units in your answer.
- b. [6 points] How much work is done to pump all of the water currently in the reservoir to the ground's surface? Be sure to include units and show enough work to support your answer.