THE DRAINING TANK EXPERIMENT

Perform the following analysis of the data obtained from the experiment performed during class.

Data to obtain:

The internal diameter of the exit pipe	d = 3/8 in.
The length of the exit pipe	L = 62 in.
The height of water in the tank	H = 10.5 in.
The volume of water collected	V = 950 mL
The time it took to collect the water	t = 16.81 s

(1) Make a sketch of the showing all the components of the apparatus. Carefully draw the dimensions d, L, and H on your sketch.

(2) Calculate the volume flow rate out of the tank from the measurements of V and t. Report your answer in gallons per minute (gpm). Calculate the area average velocity in the pipe in feet per second.

(3) Predict the volume flow rate from the tank using the **Bernoulli** equation. Apply the Bernoulli equation from the free surface of water in the tank to the exit of the pipe. What is the percent difference of the *predicted* value with the *measured* volume flow rate determined in part (2)? Discuss.

(4) Predict the volume flow rate from the tank using the **extended Bernoulli** equation. Include all relevant head losses. What is the percent difference of the *predicted* value with the *measured* volume flow rate determined in part (2)? Discuss.