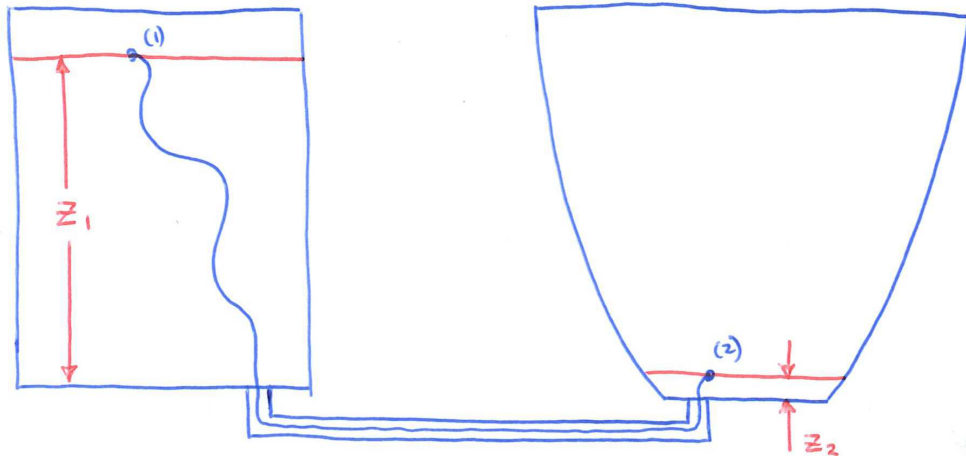


Fluid Mechanics



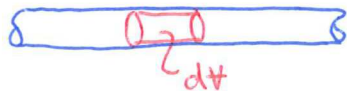
Bernoulli's Equation

$$\frac{P_1}{\rho g} + \frac{V_1^2}{2g} + z_1 = \frac{P_2}{\rho g} + \frac{V_2^2}{2g} + z_2 + \sum h_L$$

~~$\frac{P_1}{\rho g}$~~ $\nearrow$ atm ~~$\frac{V_1^2}{2g}$~~ $\nearrow$ neglect ~~$\frac{P_2}{\rho g}$~~ $\nearrow$ atm ~~$\frac{V_2^2}{2g}$~~ $\nearrow$ neglect

Solve for V in pipe:

Solve for change in volume:



$$\text{Flow rate} = Q = \frac{dV}{dt} = VA = V\pi \frac{D^2}{4}$$

so

$$dV = V\pi \frac{D^2}{4} dt$$