Prelab HW 9: Air-Water Two-Phase Flow Patterns in Vertical Pipe

Consider a two-phase air-water flow in a vertical pipe of 5.04 cm (two inch) diameter.
(1) Using the homogeneous equilibrium model first calculate the total pressure drop in the pipe for a length of 2 m. for the following air and water flow rates given as volumetric flow rate
(2) Then plot the total pressure drop as a function of flow quality.
Assume 1 atmospheric pressure condition and room temperature for properties of air and water.

Air inlet flow rate (m^3/s)	Water inlet flow arte (m^3/s)
1.0×10^{-3}	0.2×10^{-3}
1.0×10^{-3}	0.4×10^{-3}
1.0×10^{-3}	0.8×10^{-3}
1.0×10^{-3}	2.0×10^{-3}
2.0×10^{-3}	0.2×10^{-3}
2.0×10^{-3}	0.4×10^{-3}
2.0×10^{-3}	0.8×10^{-3}
2.0×10^{-3}	2.0×10^{-3}
10×10^{-3}	0.2×10^{-3}
10×10^{-3}	0.4×10^{-3}
10×10^{-3}	0.8×10^{-3}
10×10^{-3}	2.0×10^{-3}