

16. Consider the open end of the pipe. The balance of the pressures inside and outside the pipe requires that $p + \rho_w(L/2)g = p_0 + \rho_w h g$, where p_0 is the atmospheric pressure, and p is the pressure of the air inside the pipe, which satisfies $p(L/2) = p_0 L$, or $p = 2p_0$. We solve for h :

$$h = \frac{p - p_0}{\rho_w g} + \frac{L}{2} = \frac{1.01 \times 10^5 \text{ Pa}}{(1.00 \times 10^3 \text{ kg/m}^3) (9.8 \text{ m/s}^2)} + \frac{25.0 \text{ m}}{2} = 22.8 \text{ m} .$$