

MEMS0071 - Introduction to Fluid Mechanics
Quiz #6

Problem #1

If the water pressure (gage) inside a hose is 500 [kPa], how high upward can the water be sprayed?
Applying the Bernoulli equation, taking 1 as the nozzle of the hose and 2 the maximum height:

$$\frac{P_1}{\rho g} + \frac{V_1^2}{2g} + z_1 = \frac{P_2}{\rho g} + \frac{V_2^2}{2g} + z_2$$
$$\Rightarrow z_2 = \frac{P_1 - P_2}{\rho g} = \frac{500 \text{ [kPa]}}{(998 \text{ [kg/m}^3\text{]})(9.81 \text{ [m/s}^2\text{]})} = 51.07 \text{ [m]}$$