



Water is pumped from the reservoir on the left to the reservoir on the right. The pump located between points 2 and 3 sits 4 m above the water surface of the left reservoir, and 2 m below the water surface of the right reservoir. The pipe diameter is 10 cm along the entire length of the pipe. The length of the pipe on the upstream (suction) side of the pump is 20 m, and the length on the downstream side is 80 m. The pump provides 8.7 m head. Friction headloss can be

calculated as $h_L = 0.01 \left(\frac{L}{D} \right) \frac{V^2}{2g}$.

Determine the velocity of flow, V , the discharge, Q , and the gage pressure, P_g at points 1, 2, 3, 4, 5, and 6. Points 2 and 3 are immediately upstream and downstream from the pump. Points 2, 3, 4 and 5 have the same elevation as the pump.