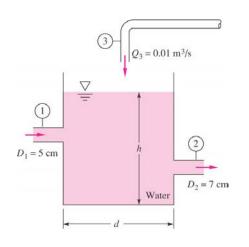NAME

Fluids-ID

Quiz 6. The open tank shown below contains water at 20°C and is being filled through sections 1 and 3. Assume incompressible flow. If the water level h is constant, i.e. $dh/dt = 0$, determine the exit velocity V_2 for the given data V_1 = 3 m/s and Q_3 = 0.01 m³/s.

Continuity equation:

$$\frac{\partial}{\partial t}\int_{CV} \rho dV = \Sigma \dot{m}_{out} - \Sigma \dot{m}_{in}$$

where

$$\dot{m} = \rho Q = \rho AV$$