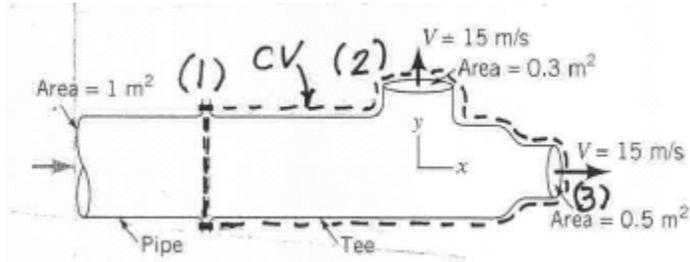


November 2, 2015

NAME

Fluids-ID

Quiz 9. Water flows as two free jets (section 2 and 3) from the tee attached to the pipe as shown in the Figure. Viscous effects and gravity are negligible. Determine (a) Velocity at section 1 ( $V_1$ ), (b) pressure at section 1 ( $p_1$ ) and (c) x-component of the force that the pipe exerts on the tee. ( $\rho = 999 \text{ kg/m}^3$ )



Momentum equation:

$$\Sigma \underline{F} = \frac{\partial}{\partial t} \int_{CV} \underline{V} \rho dV + \int_{CS} \underline{V} \rho \underline{V} \cdot d\underline{A}$$

Bernoulli's equation:

$$p_1 + \frac{1}{2} \rho V_1^2 + \gamma z_1 = p_2 + \frac{1}{2} \rho V_2^2 + \gamma z_2$$

Note: Attendance (+2 points), format (+1 point)