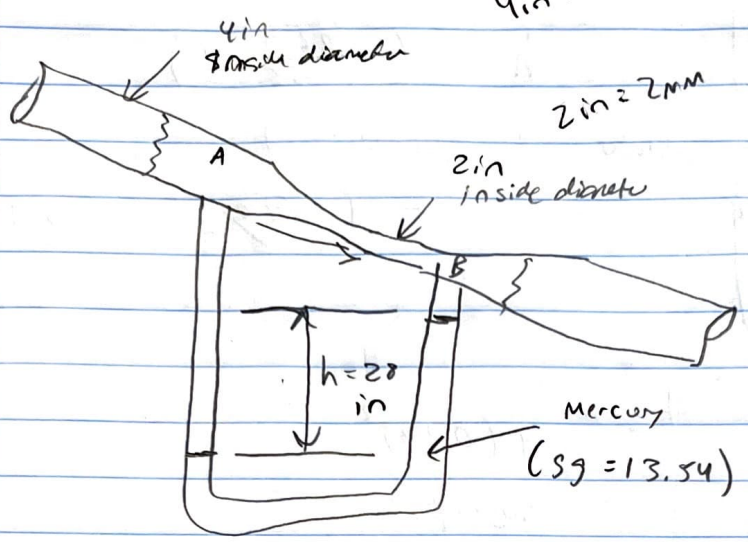
HW 1.3

Chapter 6 : 79

$4_{in} = 4mm$

$2in = 2mm$

$g = 0.90$



$h = 28$

$= 711.2mm$

$= 0.71m$

$$\frac{V_2^2}{2g} + \frac{P_2}{\rho g} + z_2 = \frac{V_1}{2g} + \frac{P_1}{2g} + z_1$$

$A_1 = \left(\frac{\pi}{4}\right)(0.1^2 m^2)$

$= 0.00785 m^2$

$A_2 = \left(\frac{\pi}{4}\right)(0.05^2)$

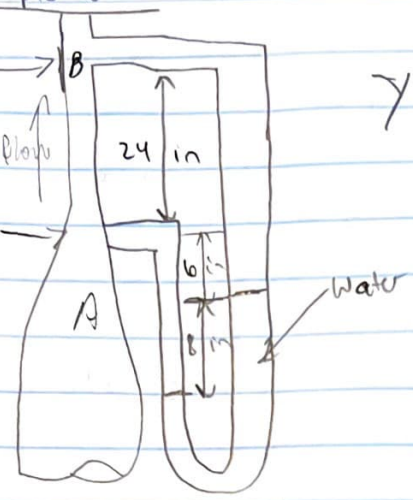
$0.00196\ m^2$

$$Q = \frac{(0.00785)(0.00196)}{\sqrt{(0.00785)^2 - (0.00196)^2}} \left(\sqrt{(2)(9.81)(0.71)\left(\frac{13.54}{0.9} - 1\right)}\right)$$

$$Q = (0.00202)(14.44)$$

$$Q = 0.029\ m^3$$

Chapter 82



$0.17 = \frac{2}{12}$ in

$0.33 = \frac{4}{12}$ in

$\gamma = 55.0\ lb/ft^3$

$h = 8\left(\frac{62.4}{55} - 1\right)$

$8(0.135)$

$= 1.076/12 = 0.0897\ ft$

$A_1 = \frac{\pi}{4}(0.33)^2$

$= 0.086\ ft^2$

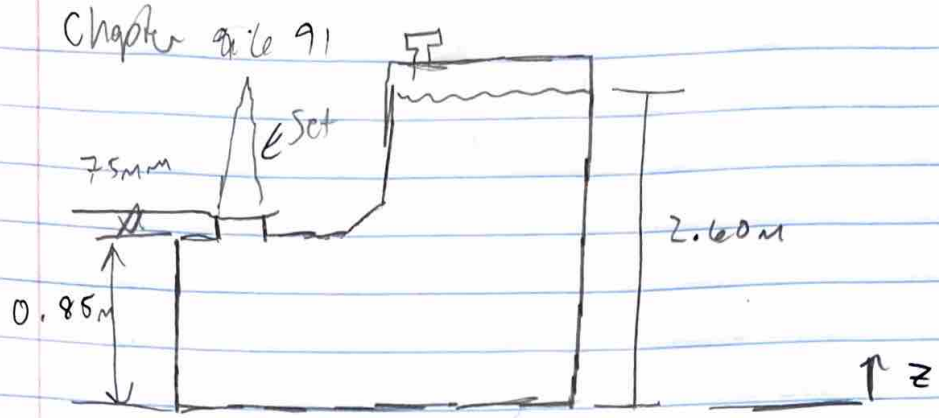
$A_2 = \frac{\pi}{4}(0.17)^2$

$= 0.022\ ft^2$

$$Q = \frac{(0.086)(0.022)\sqrt{2(32.2)(0.897)}}{\sqrt{(0.0855)^2 - (0.022)^2}}$$

$$Q = \frac{0.014}{0.083} = 0.1\ ft^3/s$$

Chapter 9 ex 91



$$h_A + \frac{p_1}{\gamma} + \frac{V_1^2}{2g} + z_1 = \frac{p_2}{\gamma} + \frac{V_2^2}{2g} + z_2 + h_L$$

$$0.85 + 0.075 + h = 2.6$$

$$h = 1.675\,m$$