

3.



$$P_1 + \frac{1}{2}\rho v_1^2 + \rho gh_1 = P_2 + \frac{1}{2}\rho v_2^2 + \rho gh_2$$

$$P_{\text{atm}} + 0 + (1060)(9.8)h = P_{\text{atm}} + 5000 + 0 + (1060)(9.8)(0)$$

$v_1 = 0$ $v_2 = 0$ \uparrow

$$(1060)(9.8)h = 5000$$

$$\underline{\underline{h = .48 \text{ m}}}$$

$$A_2 v_2 = \frac{.2 \text{ cm}^3}{\text{sec}}$$

$$d = .05 \text{ cm}$$

$$r = .025 \text{ cm}$$

$$\pi (.025)^2 v_2 = \frac{.2 \text{ cm}^3}{\text{s}}$$

$$v_2 = 101.8 \frac{\text{cm}}{\text{s}}$$

$$v_2 = 1.02 \frac{\text{m}}{\text{s}}$$

$$P_{\text{atm}} + 0 + (1060)(9.8)h = P_{\text{atm}} + 5000 + \left(\frac{1}{2}\right)(1060)(1.02)^2 + 0$$

$$10388h = 5551.4$$

$$\underline{\underline{h = .534 \text{ m}}}$$