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Mini Exam 1

CM3215

17 Sept 2009

1. $P_1 = 1 \text{ atm}$

$P_2 = 1 \text{ atm}$

$V_1 = 0$

$V_2 = 0$

$z_1 = 0$

$z_2 = (25 - 5) = \boxed{20 \text{ ft}}$

$F = 0$ (neglect)

MEB

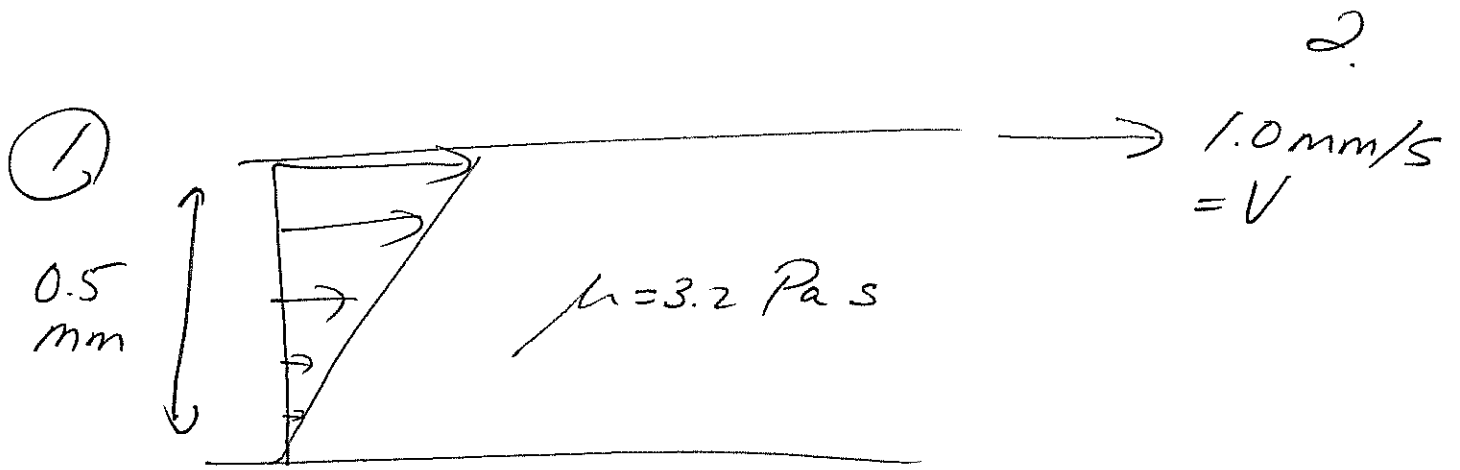
$$\cancel{\frac{\Delta P}{\rho}} + \cancel{\frac{\Delta V^2}{2\alpha}} + g \Delta z + \cancel{F} = - \frac{W_{s, by}}{m}$$

\swarrow 32.174 ft/s^2
 \swarrow 20 ft

$$W_{s, by} = \left(\frac{0.38 \text{ lbm}}{s} \right) \left(\frac{32.174 \text{ ft}}{s^2} \right) (20 \text{ ft})$$

$$= 244.5224 \frac{\text{lbm ft}^2}{s^2} \left(\frac{1 \text{ lbf } s^2}{32.174 \text{ ft } \text{lbm}} \right)$$

$$W_{s, by} = 7.6 \text{ ft} \cdot \text{lbf}$$



$$\tau = \mu \frac{\Delta V}{\Delta X} = \frac{1.0 \text{ mm/s}}{0.5 \text{ mm}} \cdot 3.2 \text{ Pa s}$$

②

$$\tau = 6.4 \text{ Pa}$$

③ If V doubles,
 τ doubles

$$\tau = 12.8 \text{ Pa}$$