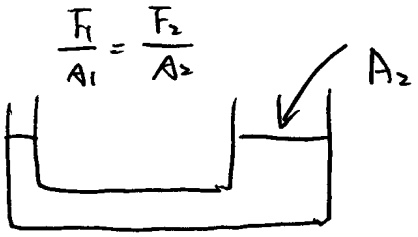
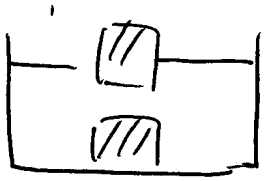
物理

Buoyant fore



14.7 kg − 13.4 g.

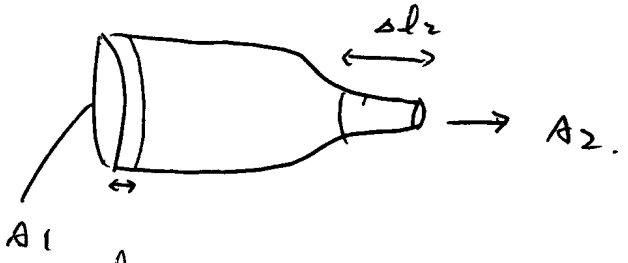


$$V = \frac{14.7}{\rho} = \frac{13.4}{\rho - 1}$$

$\rho V = 14.7 \quad (\rho - 1) V = 13.4$

Fluid in motion

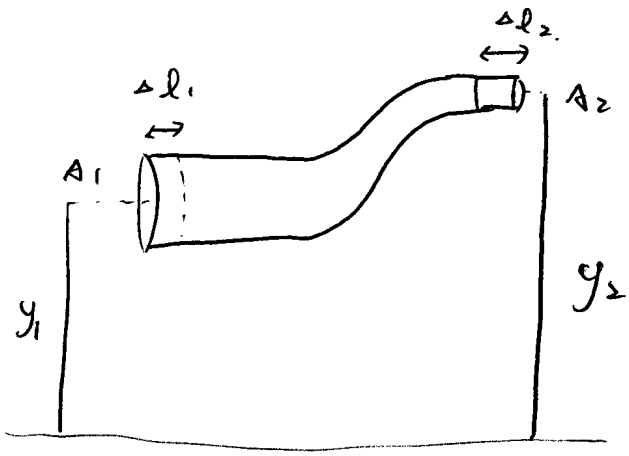
streamline (Laminar flow)



$\rho_1 = \rho_2$.

$$\rho_1 A_1 \frac{V_1}{\Delta l_1 / \Delta t} = \rho_2 A_2 V_2 \Rightarrow A_1 V_1 \quad A_2 V_2$$

Bernoulli's eq.



$W_1 = F_1 \Delta l_1 = P A_1 \Delta l_1$

$W_2 = -P_2 A_2 \Delta l_2$

$W_3 = -mg(y_2 - y_1)$

$\frac{1}{2} m v_2^2 - \frac{1}{2} m v_1^2$

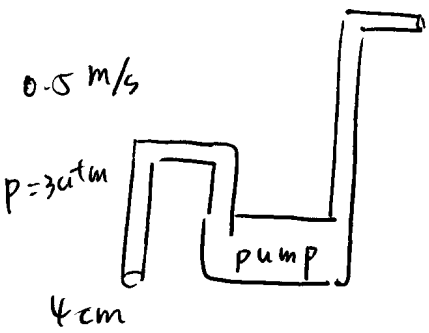
$= P_1 A_1 \Delta l_1 - P_2 A_2 \Delta l_2 - mg(y_2 - y_1)$

$m = \rho A_1 \Delta l_1 = \rho A_2 \Delta l_2$ $\quad A_1 \Delta l_1 = A_2 \Delta l_2$

$$\Rightarrow \frac{1}{2}\rho v_2^2 - \frac{1}{2}\rho v_1^2 = p_2 - p_1 - \rho g y_2 + \rho g y_1$$

$$p_1 + \frac{1}{2}\rho v_1^2 + \rho g y_1 = p_2 + \frac{1}{2}\rho v_2^2 + \rho g y_2$$

$$p + \frac{1}{2}\rho v^2 + \rho g y = \text{const.}$$



$$Av = A'v' \Rightarrow v' = \frac{Av}{A'} = \frac{4^2}{2.6} \times 0.5 = 1.2\ m/s$$

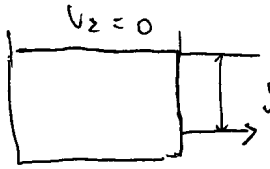
$$p + 1/2\,\rho v^2 = p' + 1/2\,\rho v'^2 + \rho g y'$$

$$p' = p + 1/2\,(\rho)(v^2 - v'^2) + \rho g y'$$

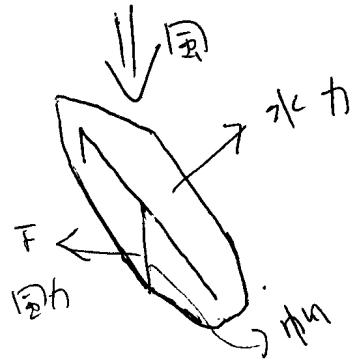
$$= 3.0 \times 10^5\ N/m^2 + 1/2 \times 1000\ kg/m^3 (0.5^2 - 1.2^2) + \rho g y'$$

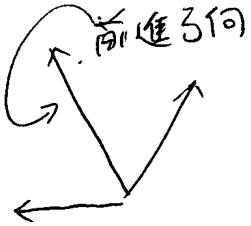
$$p' = 2.5 \times 10^5\ N/m^2 = 2.5\ atm$$

Torricelli's theorem



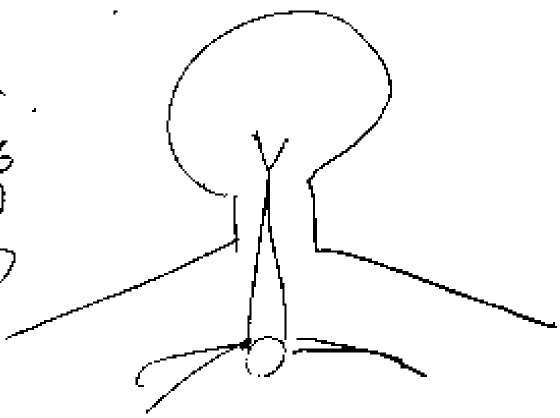
$$v_1 = \sqrt{2g(y_2 - y_1)}$$



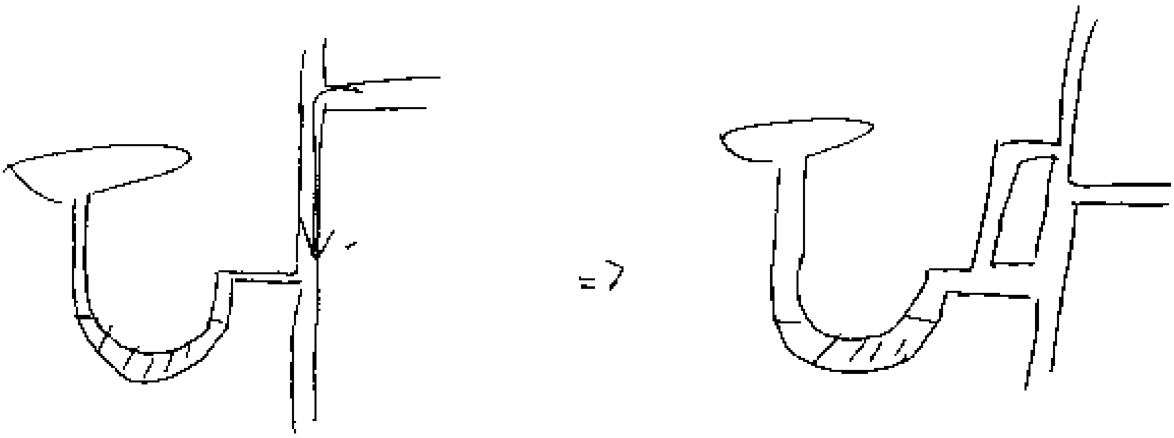


人.

横[illegible]面



TIA (transient ischemic affect)



會有氣味.