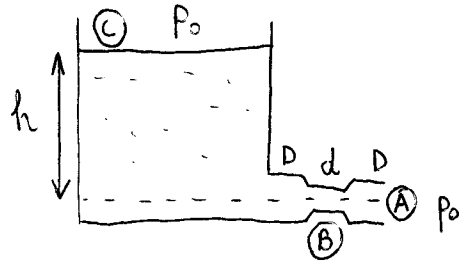
10.)



$h = 1\,m$ $\quad D = 5\,cm$ $\quad d = 4\,cm$ $\quad \rho = 1000\,\frac{kg}{m^3}$

a) (i) $v_A = ?$ $\quad$ b) $p_B = ?$

(ii) $\frac{\Delta V}{\Delta t} = ?$

$$p + \frac{1}{2}\rho v^2 + \rho g h = \text{áll} \qquad \boxed{Av = \text{áll}}$$

a) (i)

$$p_A + \frac{1}{2}\rho v_A^2 + \rho g h_A = p_C + \frac{1}{2}\rho v_C^2 + \rho g h_C \qquad p_A = p_B = p_0 \qquad v_C \approx 0$$

$$p_0 + \frac{1}{2}\rho v_A^2 + 0 = p_0 + 0 + \rho g h$$

$$v_A = \dots$$

(ii) $$\frac{\Delta V}{\Delta t} = \frac{A v \Delta t}{\Delta t} = A v \qquad A_A v_A = \frac{D^2}{4}\pi v_A = \dots$$

b)

$$A_A v_A = A_B v_B$$

$$v_B = \frac{A_A}{A_B} v_A = \dots$$

$$p_0 + \frac{1}{2}\rho v_A^2 = p_B + \frac{1}{2}\rho v_B^2$$

$$p_B = p_0 - \frac{1}{2}\rho\left(v_B^2 - v_A^2\right)$$

$$p_B = \dots$$