

## Exercice 1

1) RFH entre A et A'  $\rightarrow P_A = \rho g (z_{A'} - z_A) + P_{A'}$   $P_{A'} = P_{B'} = P_{ATM} = 0$

2) RFH entre B et B'  $\rightarrow P_B = \rho g (z_{B'} - z_B) + P_{B'}$

3) Equation de Bernoulli 
$$z_A + \frac{P_A}{\rho g} + \frac{v_A^2}{2g} = z_B + \frac{P_B}{\rho g} + \frac{v_B^2}{2g}$$

$$\frac{P_A}{\rho g} = z_B - z_A + \frac{P_B}{\rho g} + \frac{v_B^2}{2g} - \frac{v_A^2}{2g}$$

$$z_B = z_A \quad v_A = 0$$

$$\frac{P_A}{\rho g} = \frac{P_B}{\rho g} + \frac{v_B^2}{2g}$$

$$\underline{P_A = P_B + \frac{1}{2} \rho v_B^2}$$

4)  $P_A = P_B + \frac{1}{2} \rho v_B^2$

$$\frac{1}{2} \rho v_B^2 = P_A - P_B$$

$$v_B^2 = \frac{2}{\rho} (P_A - P_B)$$

$$v_B^2 = \frac{2}{\rho} (\rho g (z_{A'} - z_A) - \rho g (z_{B'} - z_B))$$

$$\rightarrow h = \Delta_1 - \Delta_2 = (z_{A'} - z_A) - (z_{B'} - z_B)$$

$$\underline{v_B = \sqrt{2gh}}$$

$$5) Q = v \times S$$

$$= \sqrt{2gh} \times \frac{\pi d^2}{4}$$

$$m \cdot s^{-1} \times m^2 = m^3 \cdot s^{-1}$$