Fecha

12.49

Datos

$v_1 = 3\ m/s$

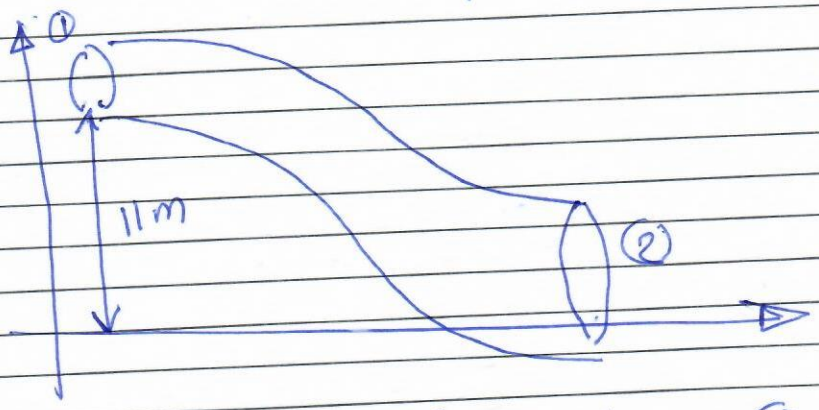
$P_1 = 5 \cdot 10^4\ Pa$

$P_2 = ?$

$d_2 = 2d_1$

$h = +11\ m$

Aplicando la ecuación de Bernoulli a la situación planteada.



$$P_1 + \frac{\rho v_1^2}{2} + \rho g h_1 = P_2 + \frac{\rho v_2^2}{2} + \rho g h_2 \quad (1)$$

Como $A_1 v_1 = A_2 v_2$; $\pi\left(\frac{d}{2}\right)^2 v_1 = \pi\left(\frac{2d}{2}\right)^2 v_2$

$$\boxed{v_2 = \frac{v_1}{4}}$$; Por lo que sustituir en la ecuación (1)

$$P_1 + \frac{\rho v_1^2}{2} + \rho g h_1 = P_2 + \frac{\rho v_1^2}{2(16)} + \rho g h_2 \to 0$$

$$P_1 + \frac{\rho v_1^2}{2} - \frac{\rho v_1^2}{32} + \rho g h_1 = P_2$$

$$P_1 + \rho \frac{15}{32} v_1^2 + \rho g h_1 = P_2$$

$$P_1 + \rho\left(\frac{15}{32} v_1^2 + g h_1\right) = P_2$$

$$5 \cdot 10^4 + 1 \cdot 10^3\left(\frac{15}{32}(3)^2 + (9.8)(11)\right) = P_2$$

$$P_2 = 1.62 \cdot 10^5\ Pa$$