

PREGUNTA 14.

continuidad: $v_1 A_1 = v_2 A_2$

$$v_2 = \frac{v_1 A_1}{A_2} \rightarrow v_1 = \frac{Q}{A_1} \rightarrow v_2 = \frac{Q}{A_2}$$

conservación de energía por u. de volumen:

$$\rho g h + \frac{1}{2} \rho v_1^2 + P_1 = P_2 + \rho g h + \frac{1}{2} \rho v_2^2 + P_2.$$

$$P_2 = P_1 + \frac{1}{2} \rho (v_1^2 - v_2^2).$$

$$P_2 = P_1 + \frac{1}{2} \rho \cdot v_1^2 \cdot \left(1 - \frac{A_1^2}{A_2^2}\right) = P_1 + \frac{1}{2} \rho v_1^2 \left(1 - \frac{r_1^4}{r_2^4}\right).$$

$$P_2 = 240 \cdot 10^5 \text{ Pa} + \frac{1}{2} (1000 \text{ kg/m}^3) (7200 \text{ m}^3/\text{s})^2.$$

() no considerar lo recuadrado. $n = 400$

conservación energía:

$$\rho g h + \frac{1}{2} \rho v_1^2 + P_1 = P_2 + \rho g h + \frac{1}{2} \rho v_2^2$$

$$P_2 = P_1 + \frac{1}{2} \rho (v_1^2 - v_2^2) = P_1 + \frac{1}{2} \rho \left(\frac{Q^2}{A_1^2} - \frac{Q^2}{A_2^2} \right).$$

$$P_2 = P_1 + \frac{1}{2} \rho \frac{Q^2}{\pi^2} \left(\frac{1}{r_1^4} - \frac{1}{r_2^4} \right).$$

$$P_2 = 240 \cdot 10^5 \text{ Pa} + \frac{1}{2} \frac{1000 \text{ kg}}{\text{m}^3} \cdot \left(\frac{7200 \cdot 10^{-6} \text{ m}^3}{\text{s}} \right)^2 \cdot \left(\frac{1}{(400 \cdot 10^{-2} \text{ m})^4} - \frac{1}{(200 \cdot 10^{-2} \text{ m})^4} \right)$$

$$P_2 = 2,25 \cdot 10^5 \text{ Pa}$$

π^2