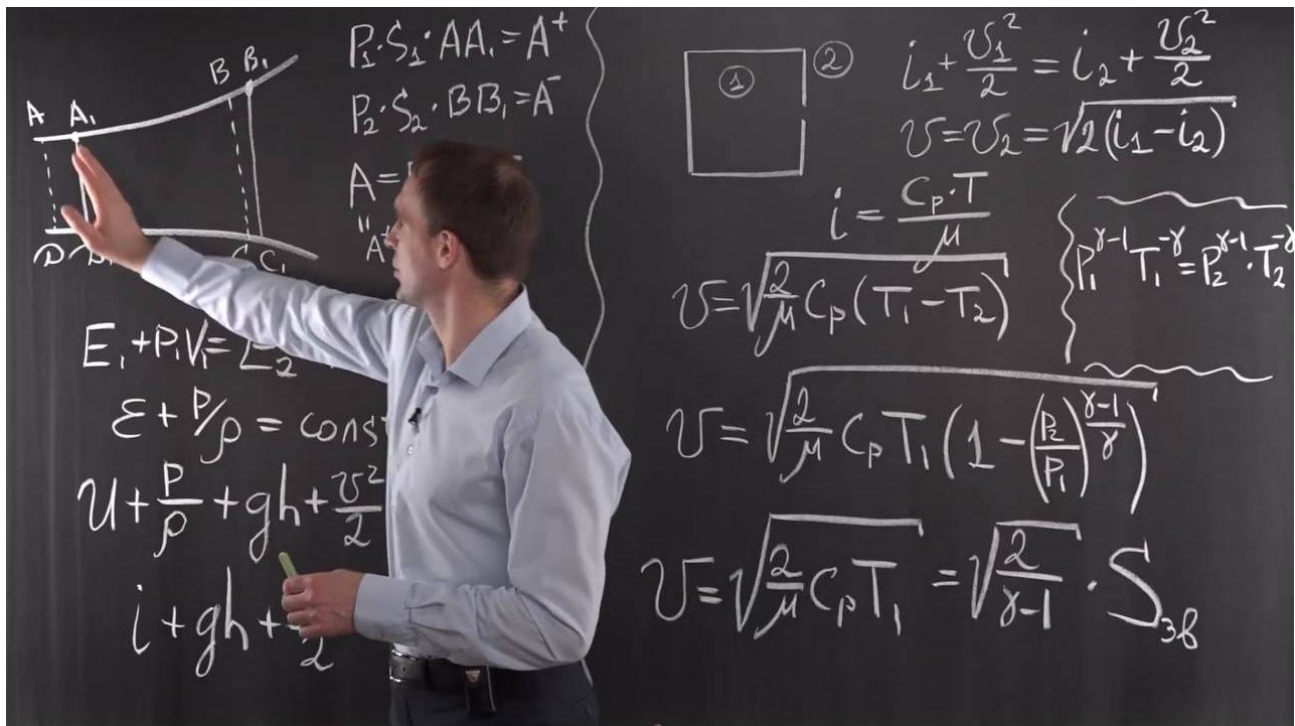


Hint 1



The chalkboard contains the following content:

Diagram: A diagram of a converging duct with two cross-sections, A-A₁ and B-B₁. The flow is from left to right. The area at A-A₁ is A₁ and at B-B₁ is A₂. The velocity at A-A₁ is v₁ and at B-B₁ is v₂. The pressure at A-A₁ is p₁ and at B-B₁ is p₂. The density is ρ. The height of the fluid is h. The temperature is T.

Equations:

$$P_1 \cdot S_1 \cdot AA_1 = A^+$$

$$P_2 \cdot S_2 \cdot BB_1 = A^-$$

$$A = A^+ - A^-$$

$$E_1 + P_1 V = E_2$$

$$\varepsilon + P/\rho = \text{const}$$

$$u + \frac{P}{\rho} + gh + \frac{v^2}{2}$$

$$i + gh + \frac{v^2}{2}$$

Equation 1: $i_1 + \frac{v_1^2}{2} = i_2 + \frac{v_2^2}{2}$

Equation 2: $v = v_2 = \sqrt{2(i_1 - i_2)}$

Equation 3: $i = \frac{C_p \cdot T}{\mu}$

Equation 4: $v = \sqrt{\frac{2}{\mu} C_p (T_1 - T_2)}$

Equation 5: $P_1^{\gamma-1} T_1^{-\gamma} = P_2^{\gamma-1} T_2^{-\gamma}$

Equation 6: $v = \sqrt{\frac{2}{\mu} C_p T_1 \left(1 - \left(\frac{P_2}{P_1}\right)^{\frac{\gamma-1}{\gamma}}\right)}$

Equation 7: $v = \sqrt{\frac{2}{\mu} C_p T_1} = \sqrt{\frac{2}{\gamma-1}} \cdot S_{3B}$