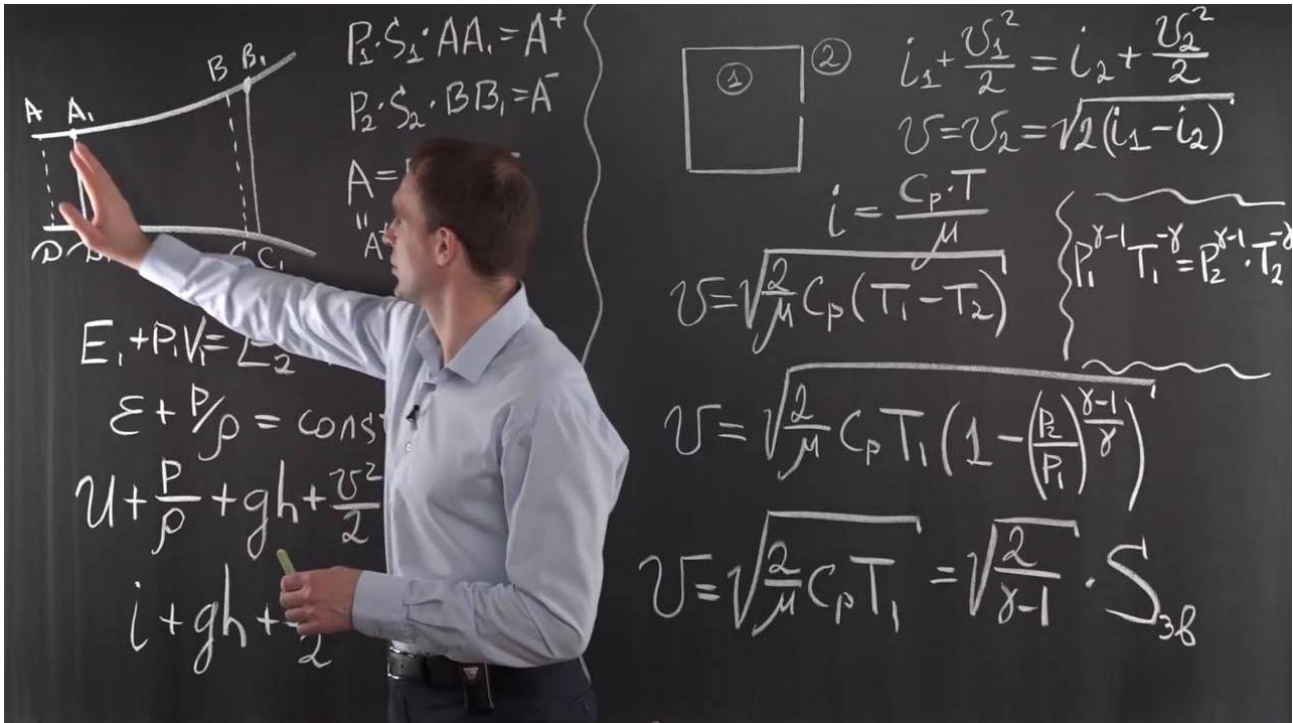


Hint 1



The chalkboard contains the following content:

Diagram: A diagram of a converging-diverging nozzle. Section 1 is at the inlet with area A_1 and section 2 is at the throat with area A_2 . The flow is from left to right. The nozzle walls are labeled $A-A_1$ and $B-B_1$. The flow area at section 1 is A_1 and at section 2 is A_2 .

Equations:

- Continuity: $P_1 \cdot S_1 \cdot AA_1 = A^+$
- Continuity: $P_2 \cdot S_2 \cdot BB_1 = A^-$
- Continuity: $A = A^+ = A^-$
- Energy: $E_1 + P_1 V = E_2$
- Energy: $\varepsilon + P/\rho = \text{const}$
- Bernoulli: $u + \frac{P}{\rho} + gh + \frac{v^2}{2}$
- Bernoulli: $i + gh + \frac{v^2}{2}$
- Isentropic flow: $P_1^{\gamma-1} T_1^{-\gamma} = P_2^{\gamma-1} T_2^{-\gamma}$
- Velocity: $v = \sqrt{\frac{2}{\mu} C_p (T_1 - T_2)}$
- Velocity: $v = \sqrt{\frac{2}{\mu} C_p T_1 \left(1 - \left(\frac{P_2}{P_1}\right)^{\frac{\gamma-1}{\gamma}}\right)}$
- Velocity: $v = \sqrt{\frac{2}{\mu} C_p T_1} = \sqrt{\frac{2}{\gamma-1}} \cdot S_{3B}$