HW #30

$dp = -\rho V\, dV$

$\Rightarrow \int dp = -\rho V\, dV \Rightarrow p = -\rho V^2 + C \Rightarrow \boxed{p + \frac{1}{2}\rho V^2 = C}$

$V_1 = 10\ m/s$, $\rho = 1.23\ kg/m^3$, $p_1 = 1.01e5\ N/m^2$, $p_2 = 0.90e5\ N/m^2$

$\Rightarrow p_1 + \frac{\rho V_1^2}{2} = p_2 + \frac{\rho V_2^2}{2} \Rightarrow V_2 = \sqrt{V_1^2 + 2\left(\frac{p_1 - p_2}{\rho}\right)}$

$\boxed{V_2 = 134.1126\ m/s}$