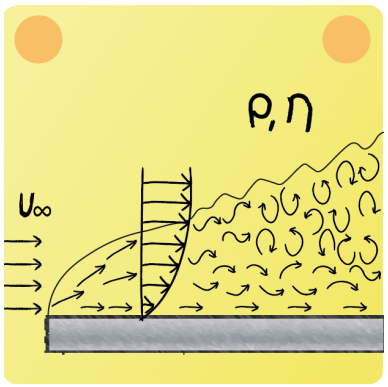
Lecture 6 Question 1

An ideal gas is flowing over a flat plate. Give an expression for the distance where the transition from laminar to turbulent flow will occur.



$$\mathrm{Re}_{\mathrm{L,crit}} = \frac{u_\infty \cdot \rho \cdot x_{\mathrm{crit}}}{\eta} = 2 \cdot 10^5$$

$$\Rightarrow x_{\mathrm{crit}} = 2 \cdot 10^5 \frac{\eta}{\rho \cdot u_\infty}$$