Today, we will:

- Discuss in more detail the eigenvalue nature of the Orr-Sommerfeld equation by plotting the stability curves for temporal stability.
- Show the video **Flow Instabilities** from the NSF Fluid Mechanics Films series, and discuss it.
- If time, discuss what happens as Re → ∞.
Comment from the movie:

Potential flow analysis

Vinson: The pressure distribution gets "shifted" i.e. non-symmetric due to Vinson effects.

What happens as \( \text{Re} \to \infty \) Depends on the type of flow!

Example: 1) 2-D mixing layer with smooth velocity profile

& Inviscid O-\( f \) eq. = Rayleigh Eq.

Ignore, neglect the viscous terms in O-\( f \) eq.
Use Rayleigh eq. for linear stability analysis

Solve Rayleigh eq.

Agree with the OJ solution at very high Re

Next time - we will look at other types of flow. I see what the stability curve looks like, and what happens as $Re \to \infty$. 