

Assignment due on April 18

1. Solve the differential equation derived in class to show that the dispersion relation for the Kelvin-Helmholtz instability for the ramped velocity profile is given by

$$\left(\frac{\gamma L}{v_m}\right)^2 + \left(kL - \frac{1}{2}\right)^2 - \frac{1}{4}e^{-4kL} = 0 \quad (1)$$

2. Plot the normalized growth rate $\gamma L/v_m$ versus kL . Determine the value of kL that marks the stability boundary.