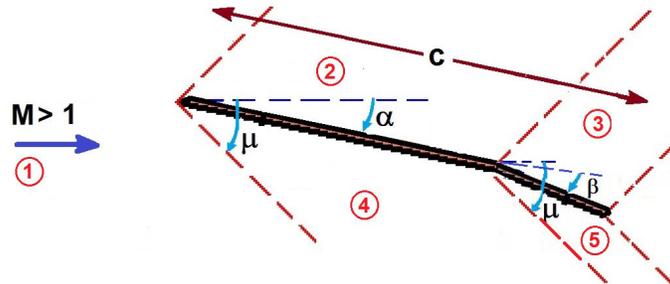


Problem 340G

A flat plate foil is fitted with a flap hinged at the 3/4 chord point as follows:



The oncoming stream is supersonic, $M > 1$, and the forward section of the foil is set at an angle of attack, α . The flap is inclined at an angle β relative to the forward section. The flow is to be analyzed using the supersonic theory for small angles of turn. Find the lift coefficient, C_L , of the foil in terms of M , α and β . Also determine the flap lift slope, $dC_L/d\beta$.