

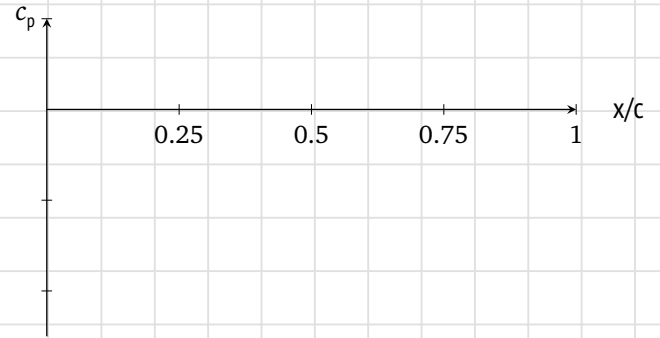
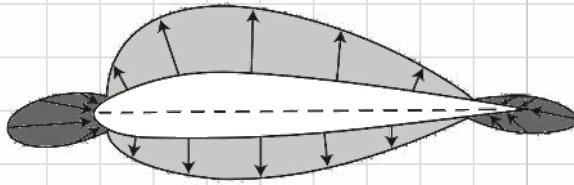
ME-445 AERODYNAMICS

02 - Basic concepts



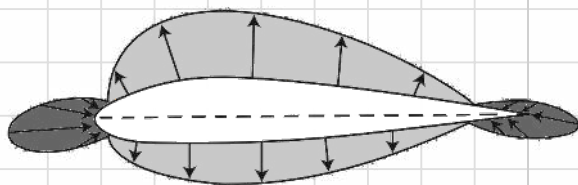
Airfoil pressure distributions

$\alpha = 0^\circ$

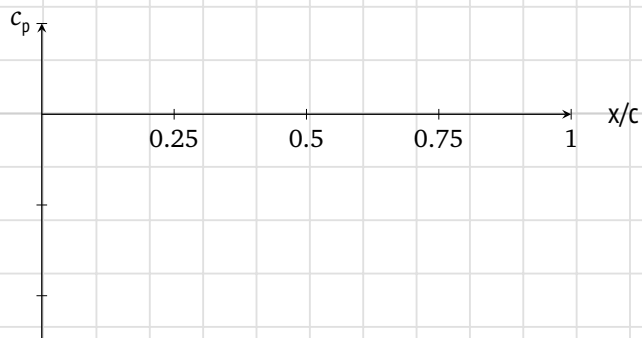
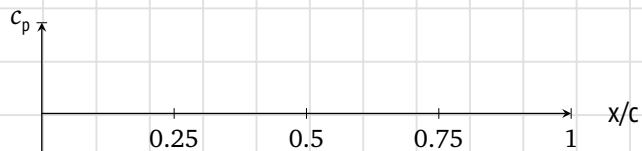
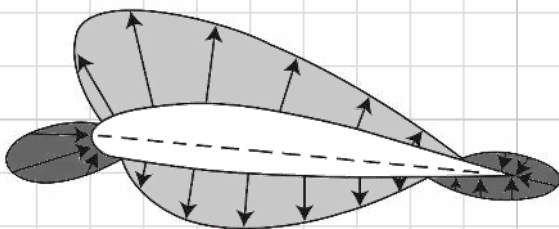


Airfoil pressure distributions

$\alpha = 0^\circ$

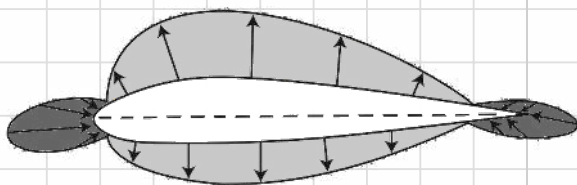


$\alpha = 6^\circ$

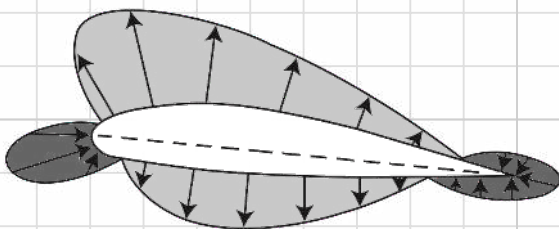


Airfoil pressure distributions

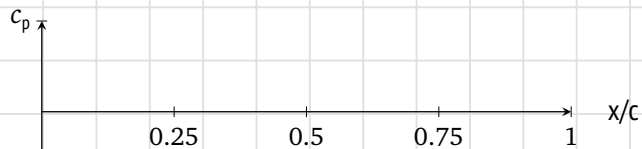
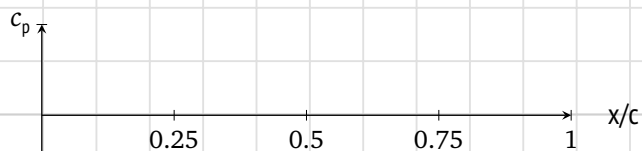
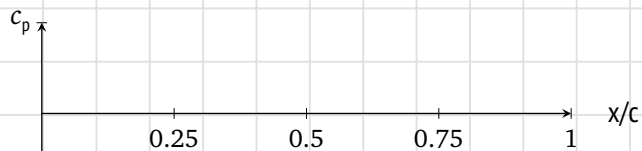
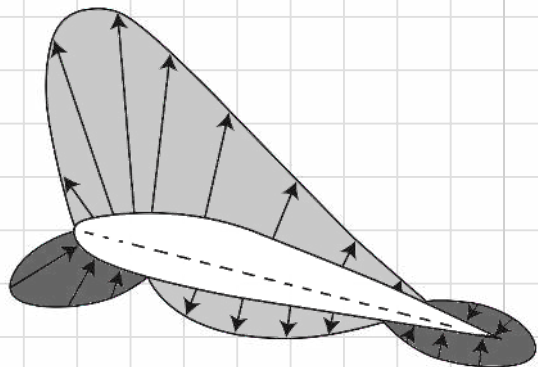
$\alpha = 0^\circ$



$\alpha = 6^\circ$



$\alpha = 15^\circ$



Airfoil lift polar

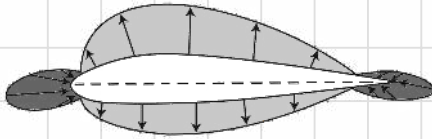
$dC_l/d\alpha$

α_0

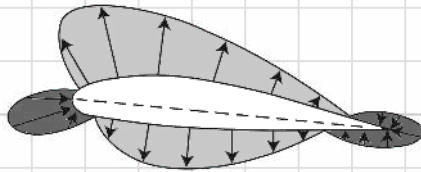
α_{stall}

$C_{l,\text{max}}$

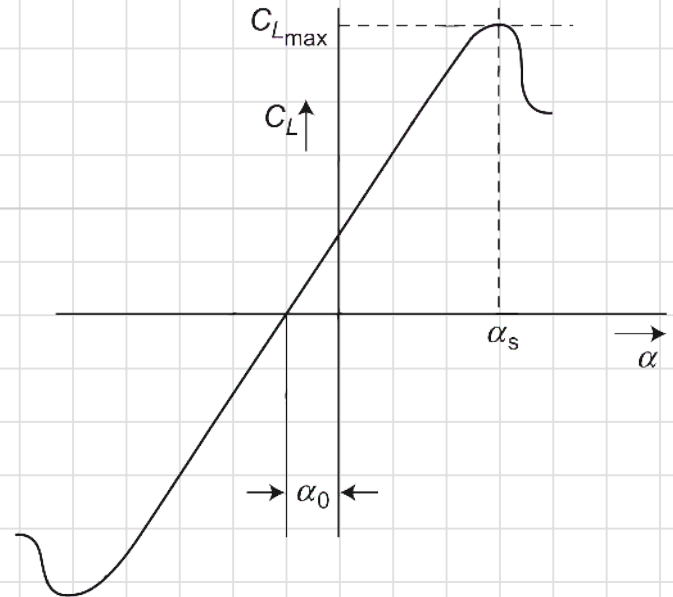
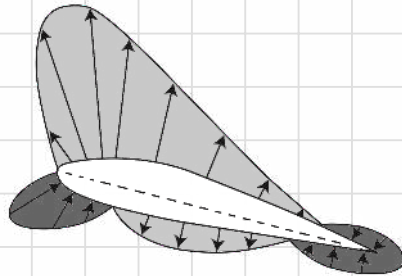
$\alpha = 0^\circ$



$\alpha = 6^\circ$

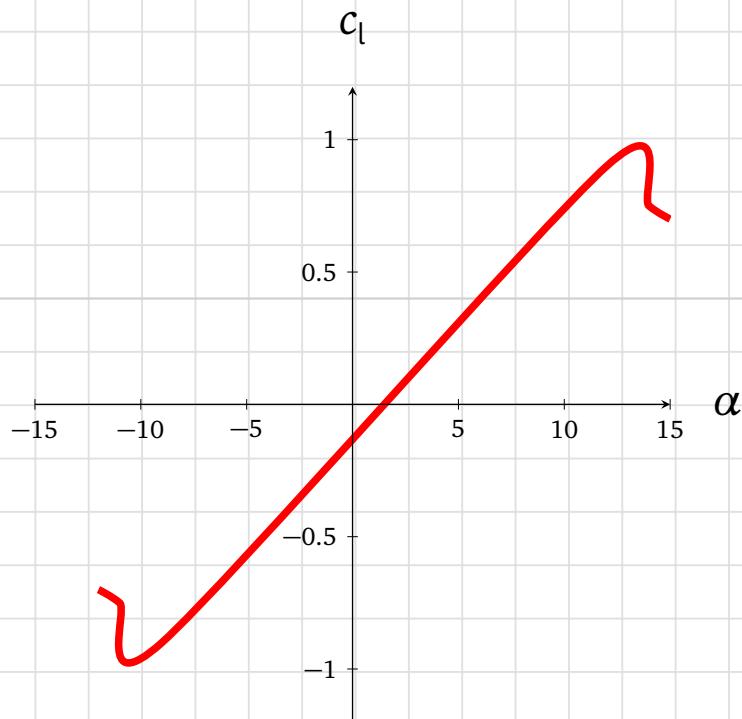
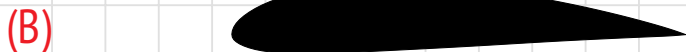


$\alpha = 15^\circ$



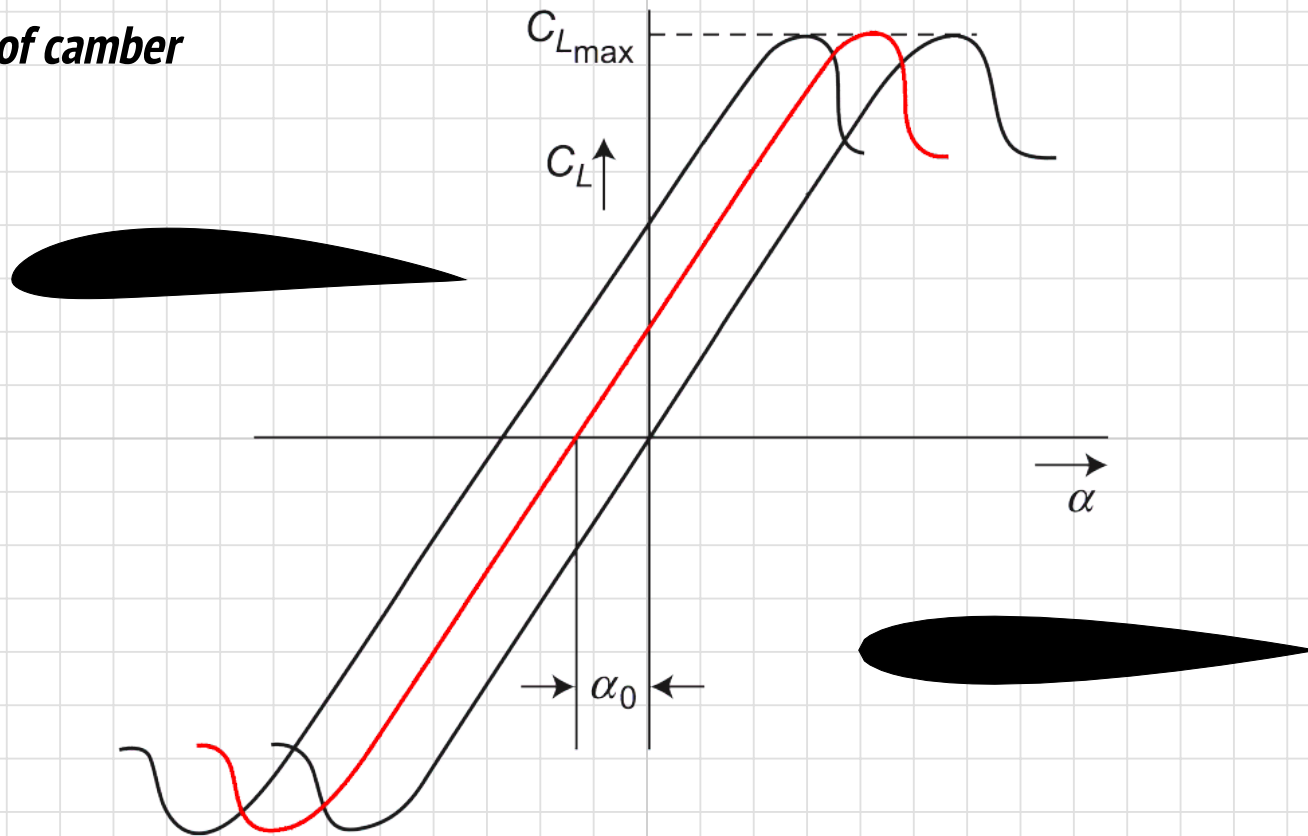
Airfoil lift polar

Which airfoil belongs to this curve

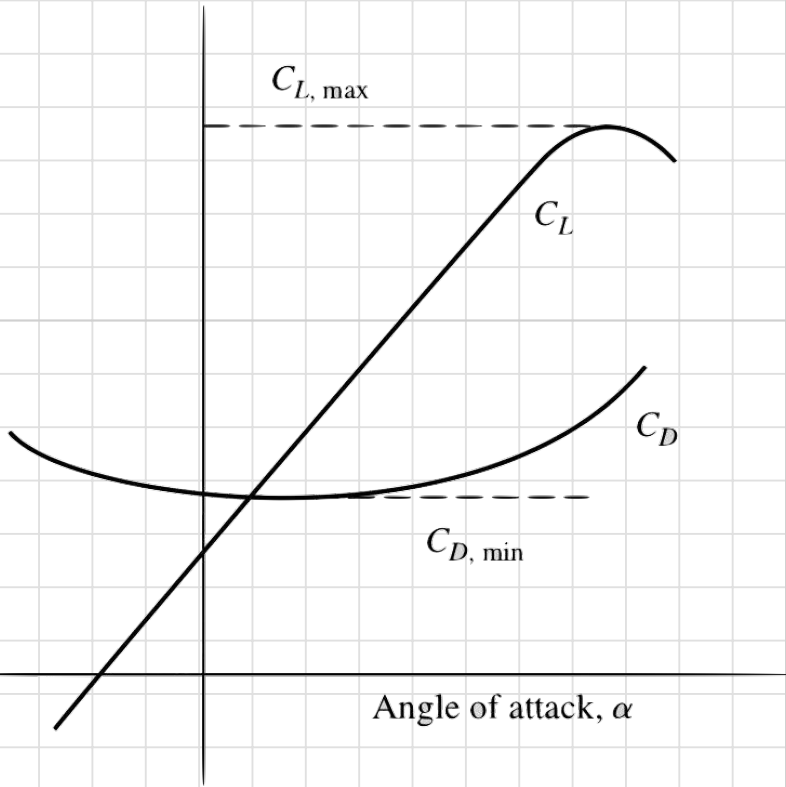


Airfoil lift polar

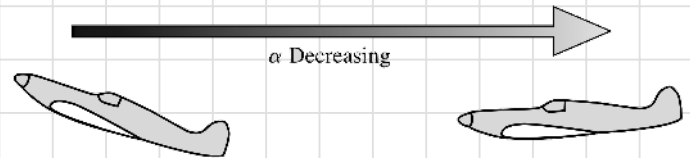
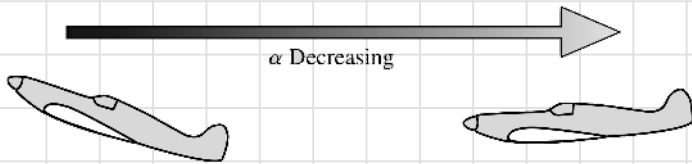
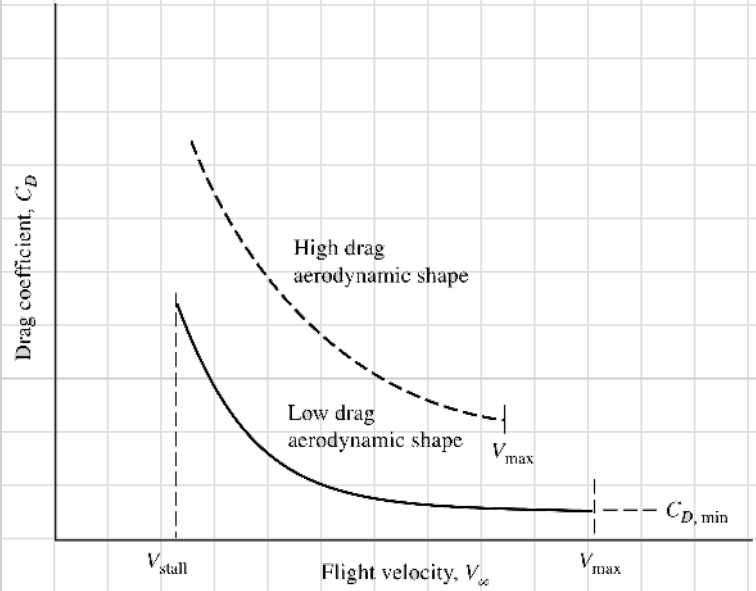
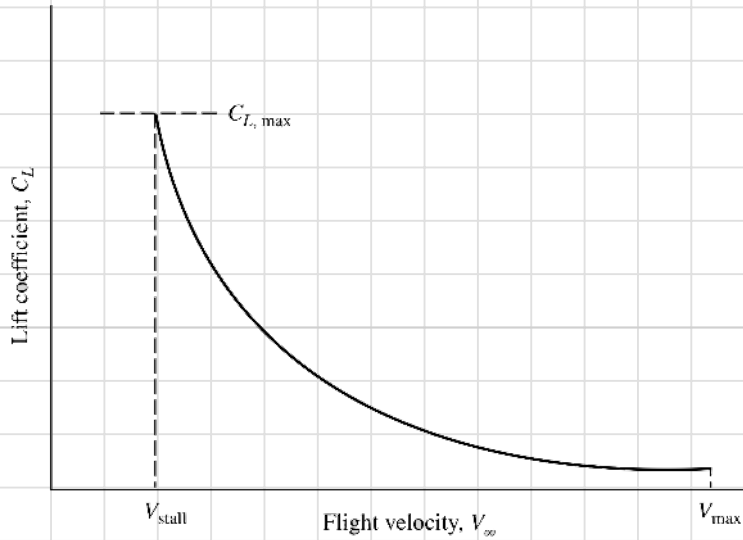
Effect of camber



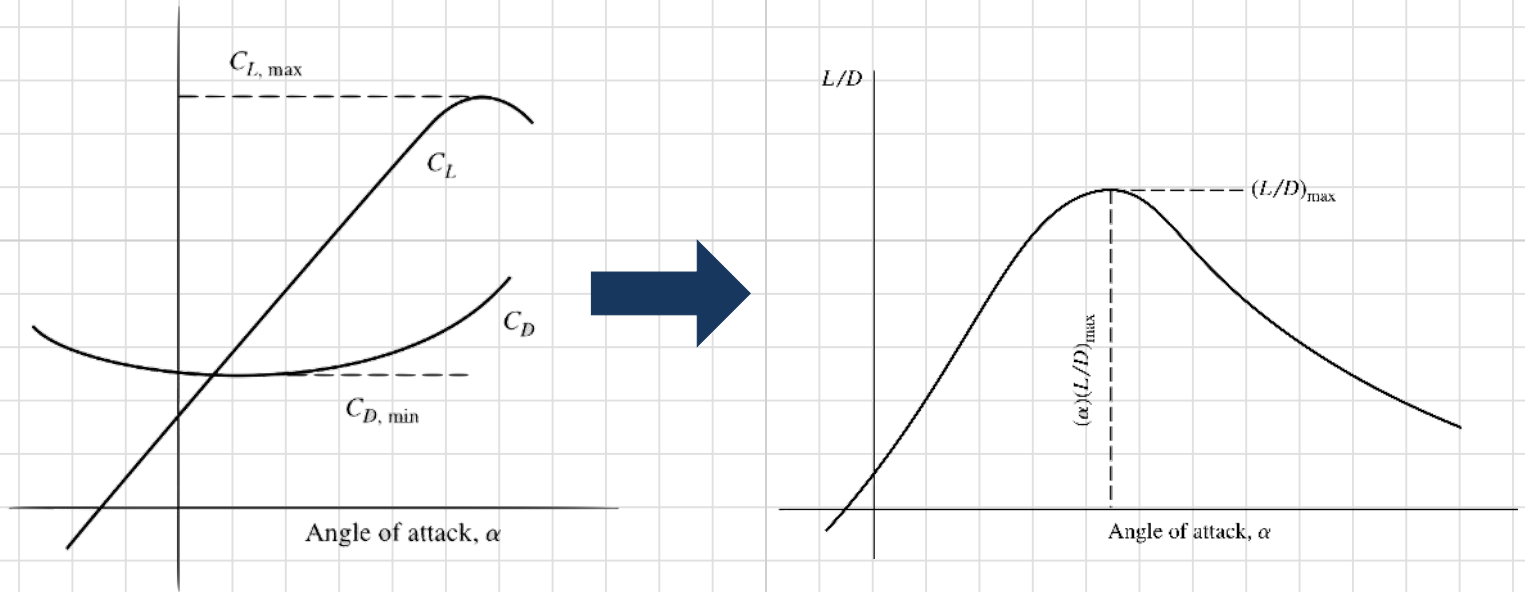
Lift and drag



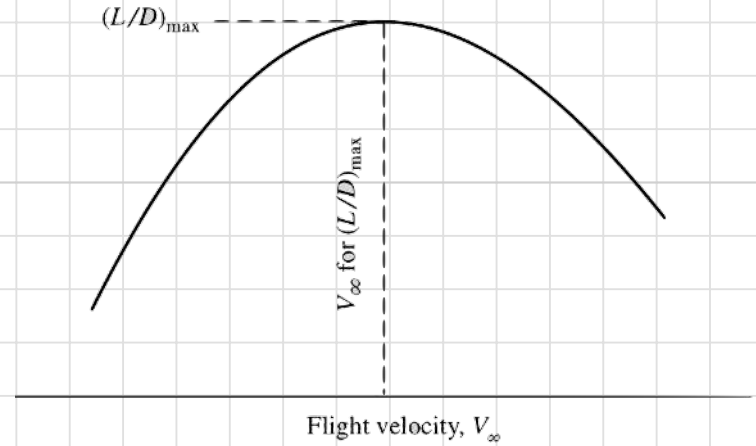
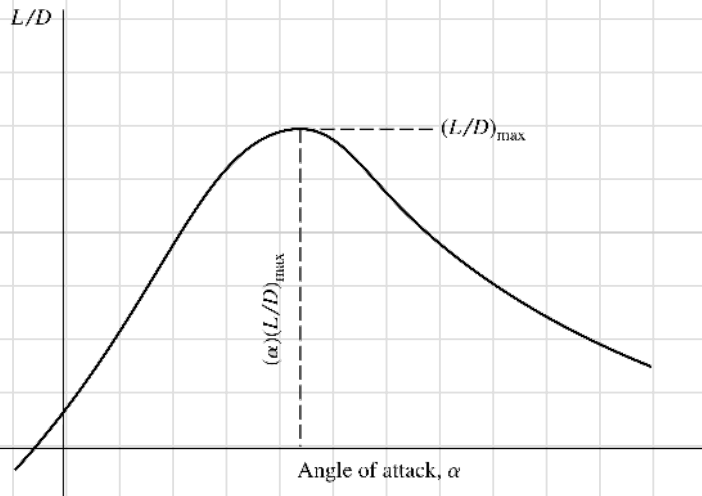
Variation of force coefficients with flight velocity



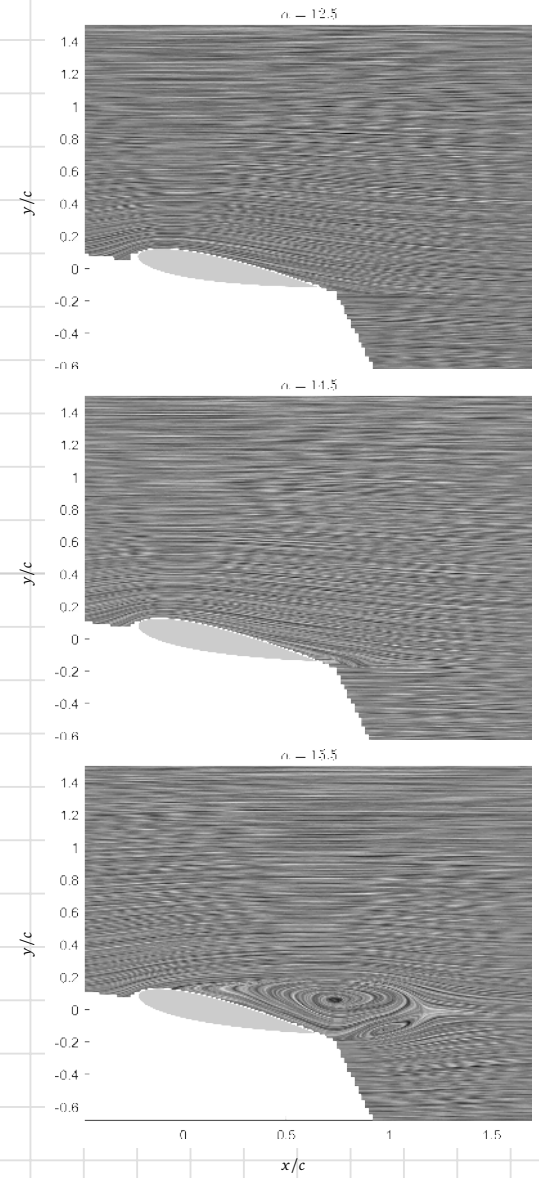
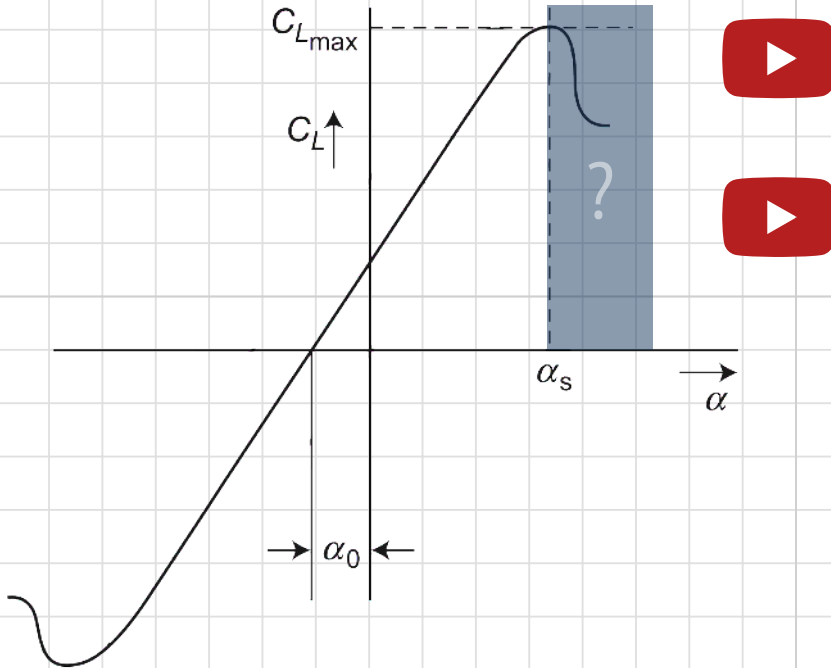
Lift-to-drag ratio



Lift-to-drag ratio

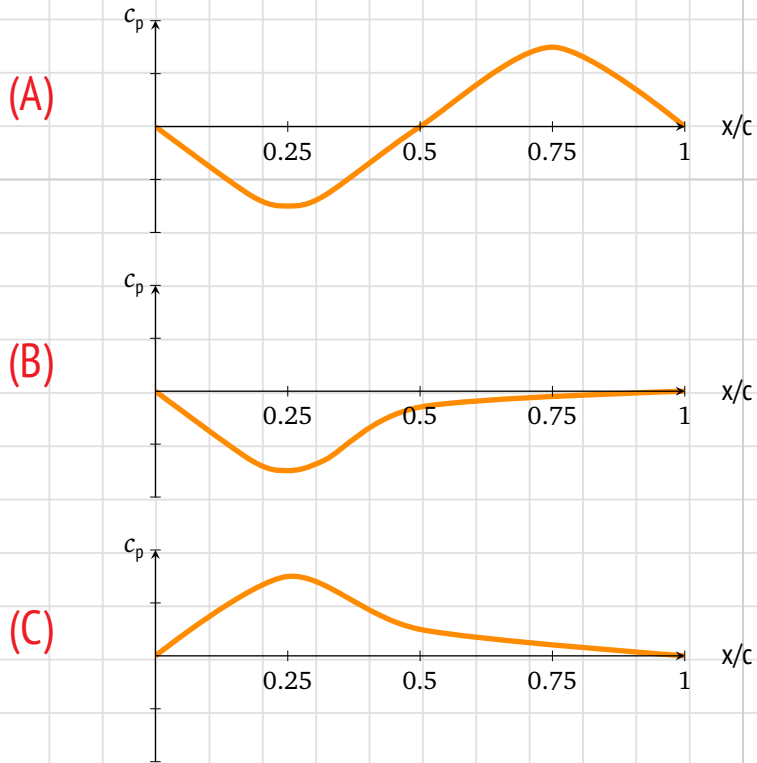


Airfoil stall



Airfoil stall

Which suction surface pressure distribution is more likely to correspond to the airfoil with flow separation?



Airfoil stall

Different stall types

