AERODYNAMICS AND PERFORMANCES OF THE UAVs CHAPTER 2

THE LIFT

$$L = \frac{1}{2}.\rho.S.CL(\alpha).V^2$$

L: Support

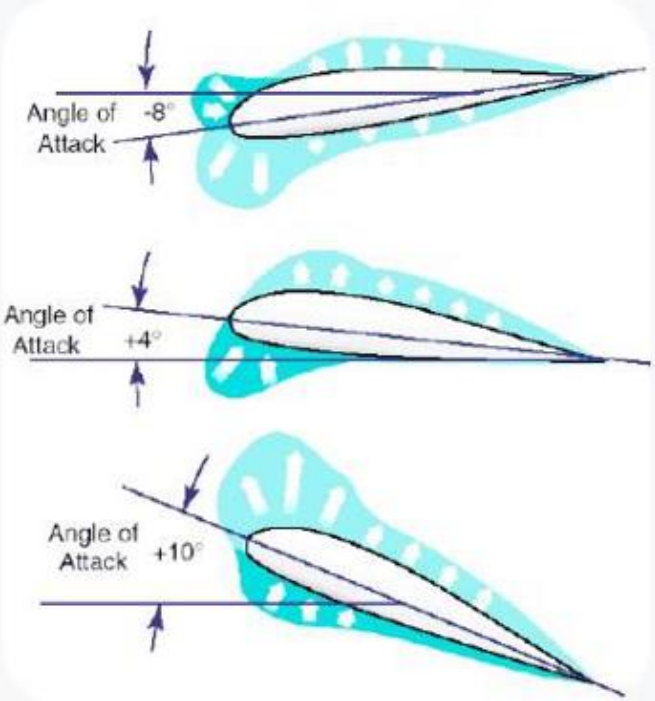
p: Density

S: Surface

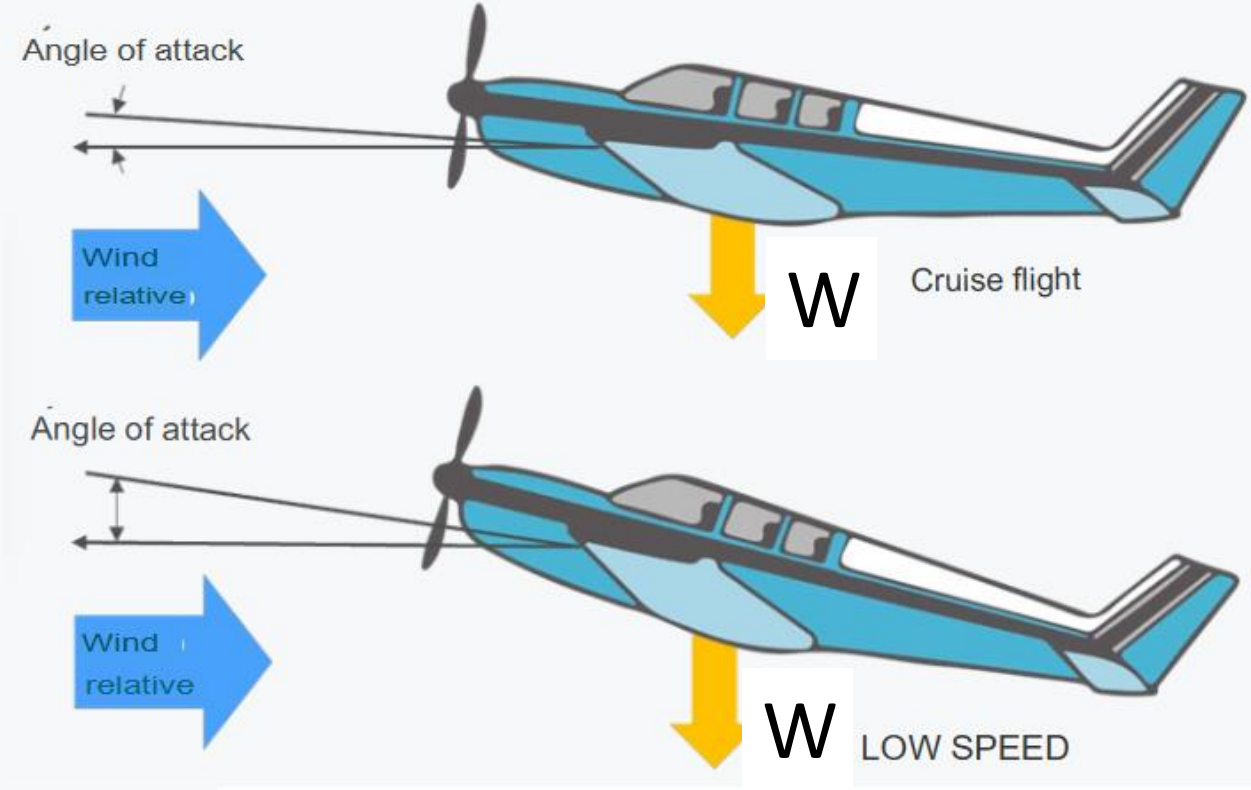
CL: Coefficient of Support

a: Density

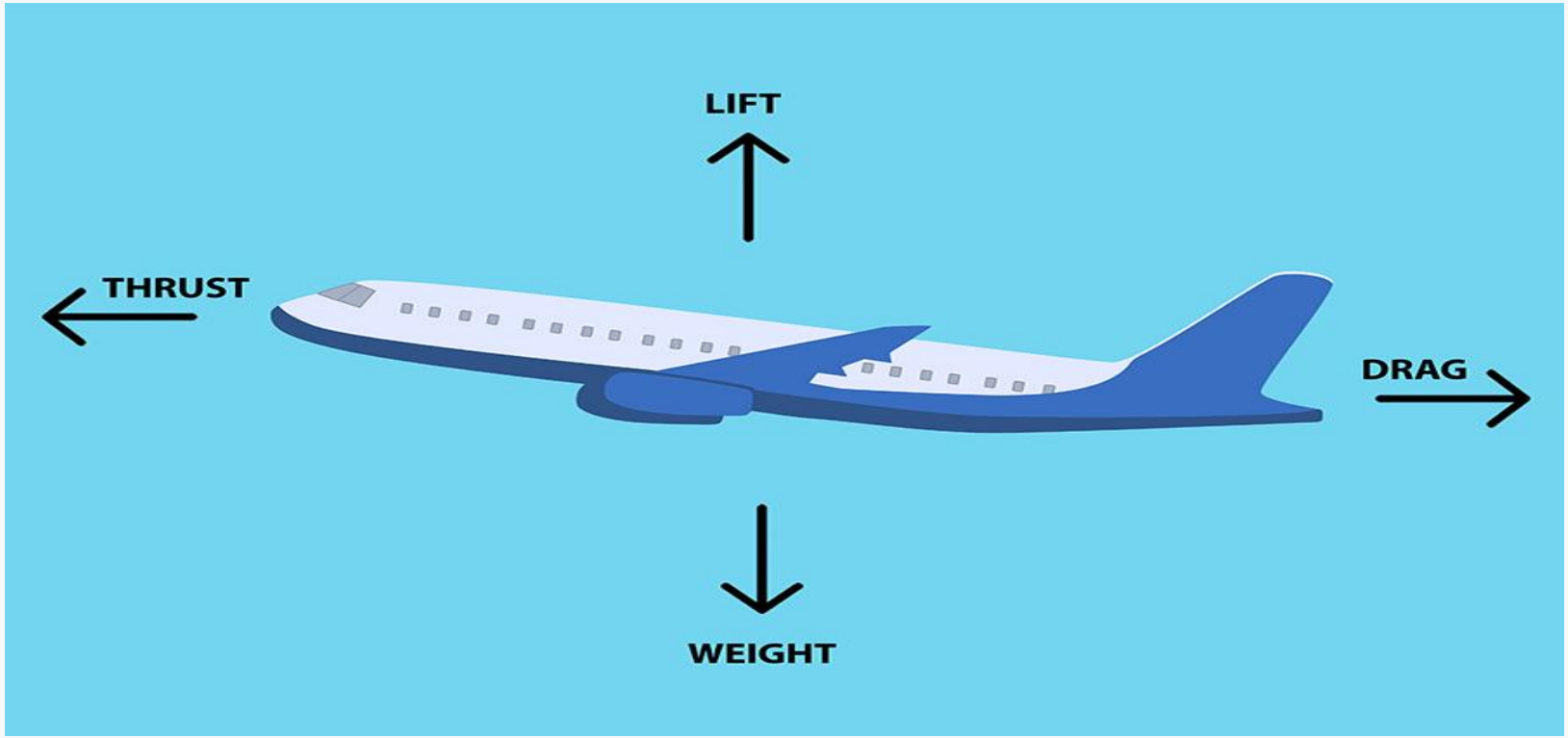
V: Speed



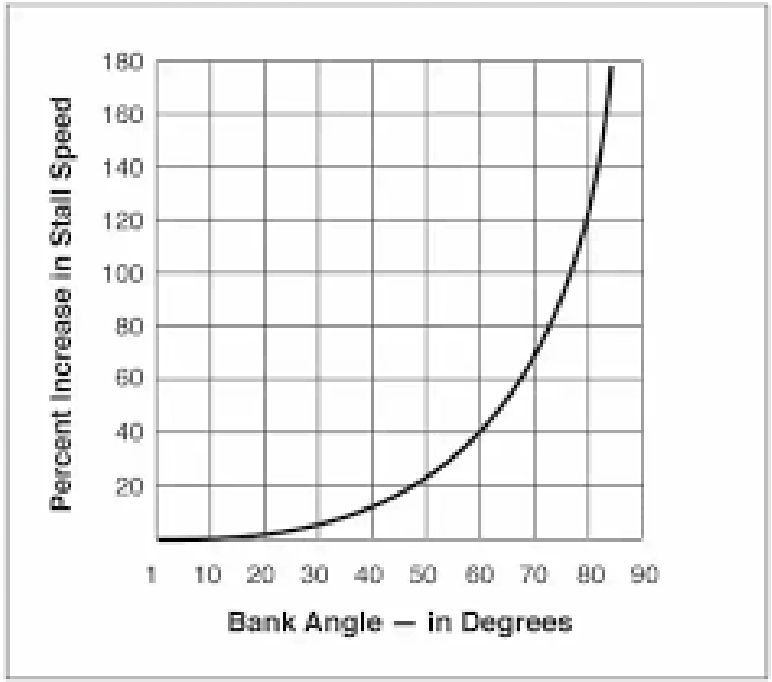
THE LIFT


Angle of attack
Wind relative
W
Cruise flight
Angle of attack
Wind relative
W
LOW SPEED

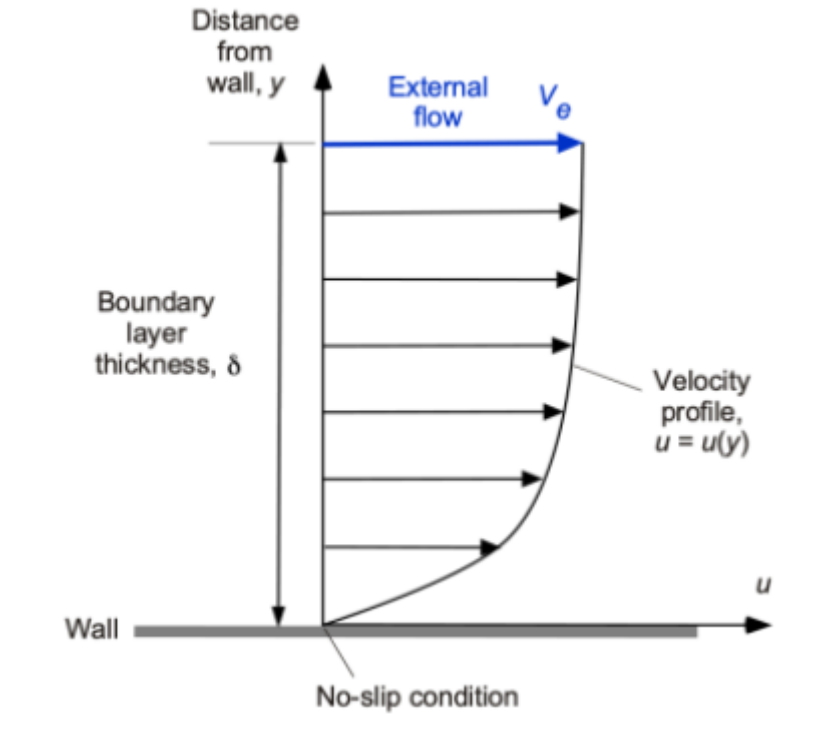
THE LIFT



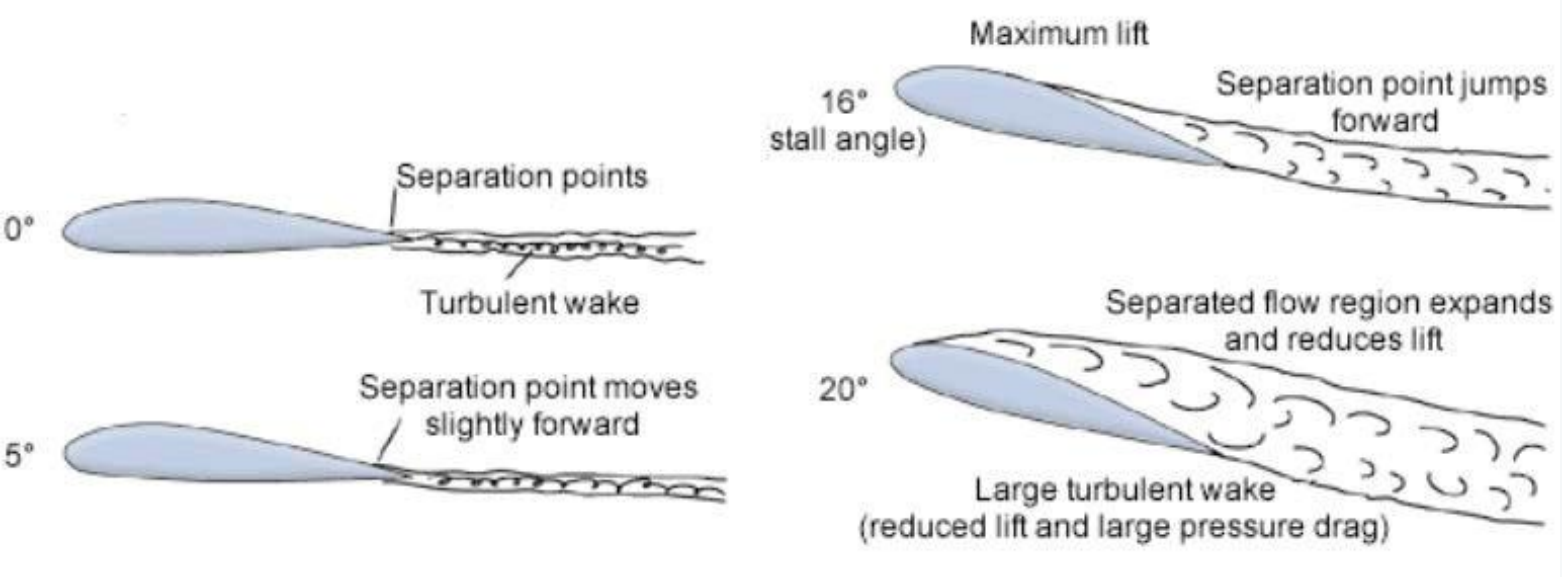
MANEUVER - INCREASED STALL SPEED



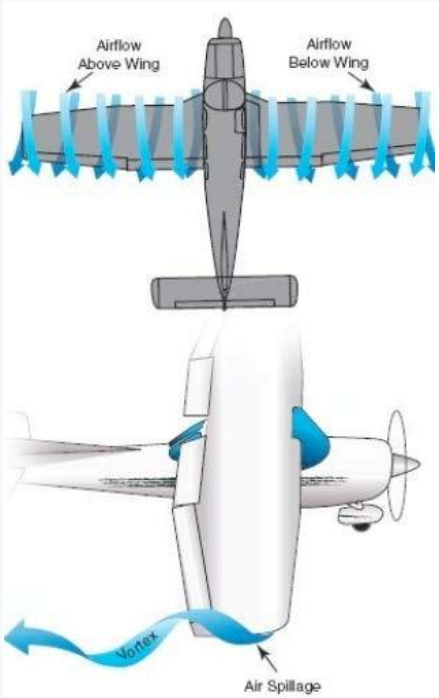
THE LIFT

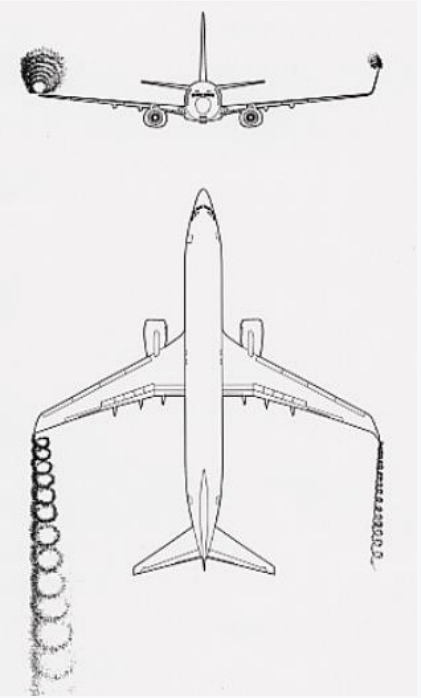

Distance from wall, y
External flow
V_e
Boundary layer thickness, δ
Velocity profile, u = u(y)
u
Wall
No-slip condition

FLOW OVER THE WING (LOSS OF LIFT)



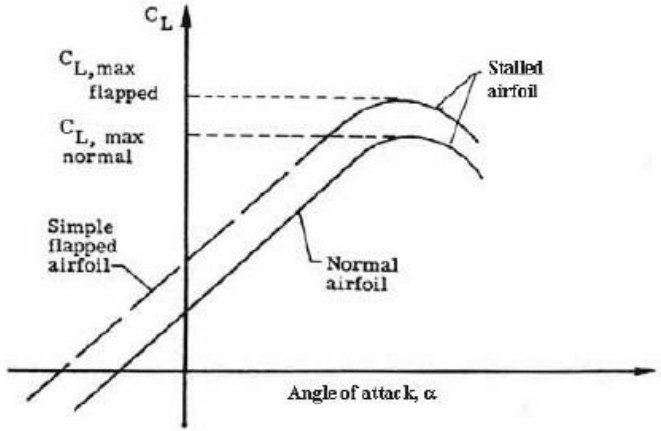
FLOW OVER THE WING



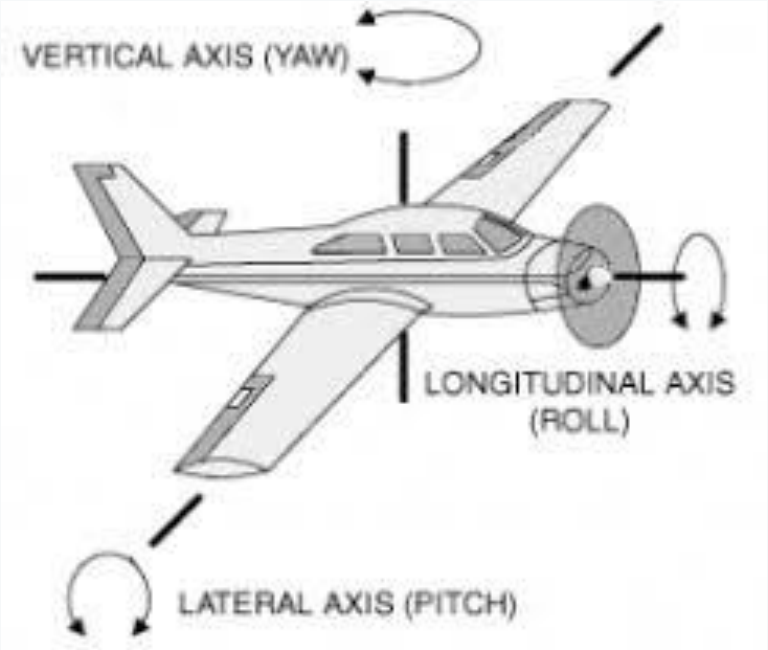


FLOW OVER THE WING

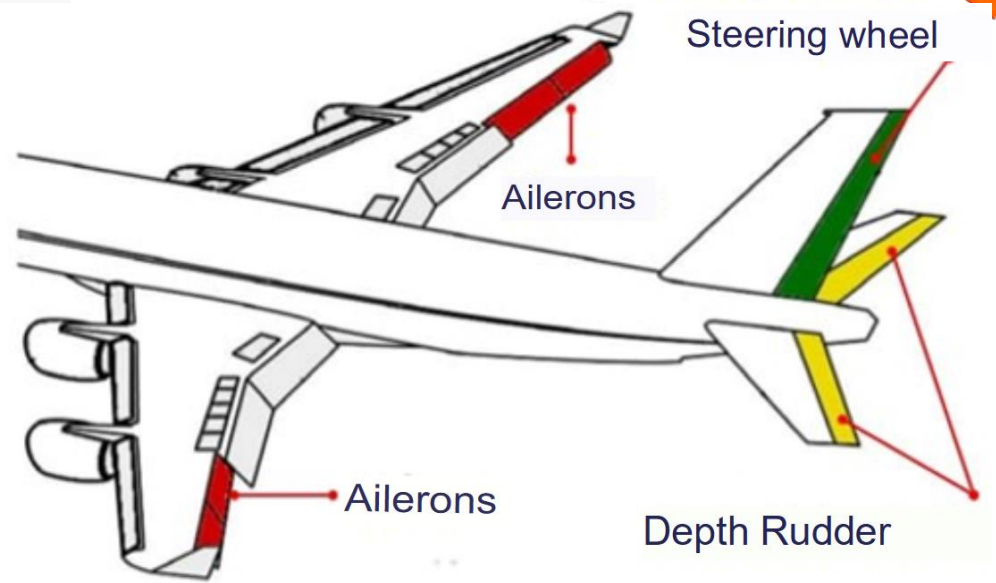
MAIN CONTROL SURFACES



MAIN CONTROL SURFACES

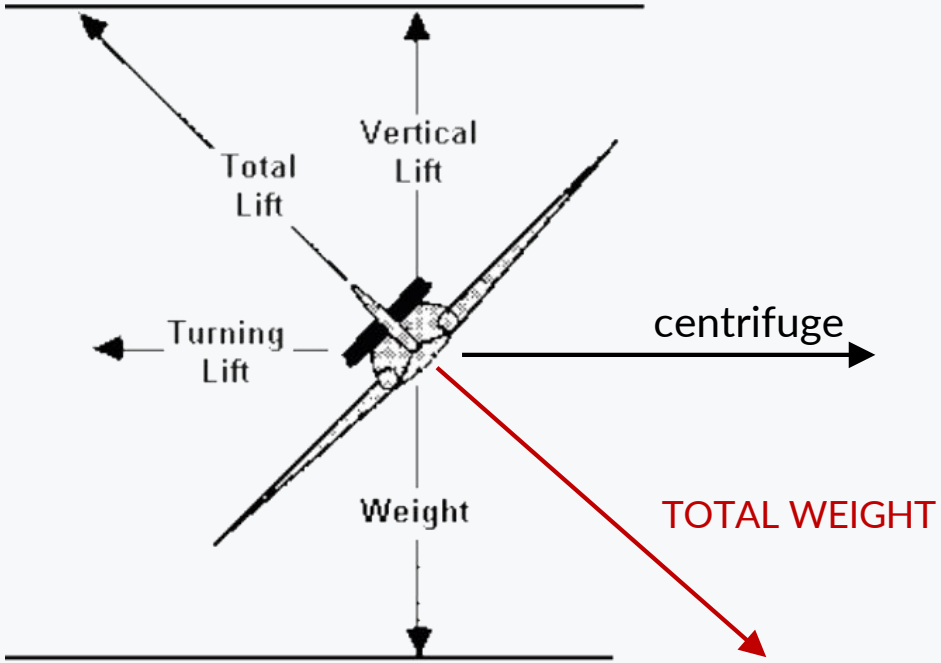


MAIN CONTROL SURFACES

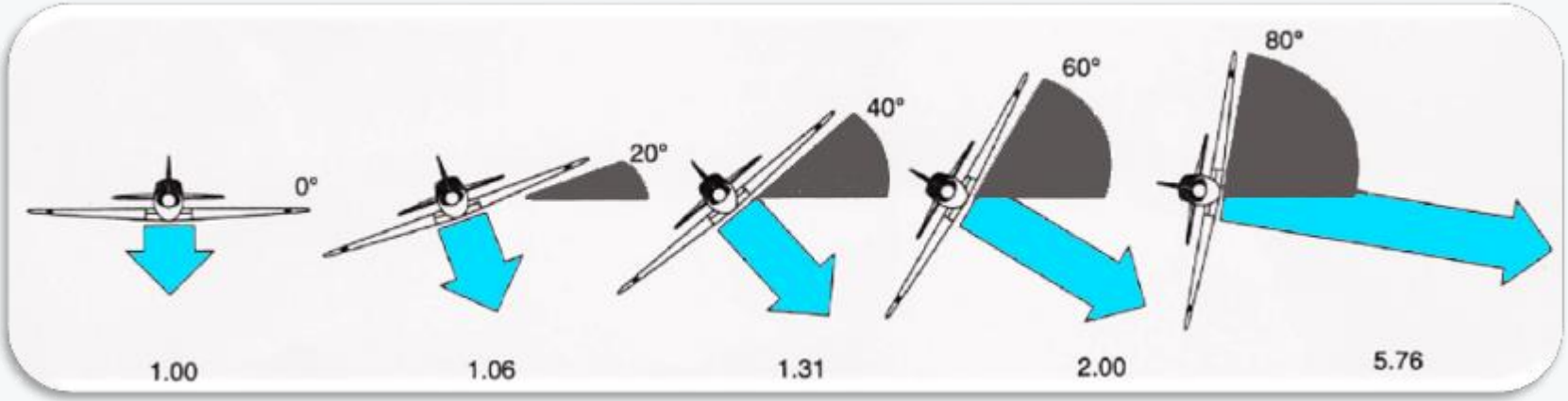


CONTROL EQUIPMENT (MODE 2)

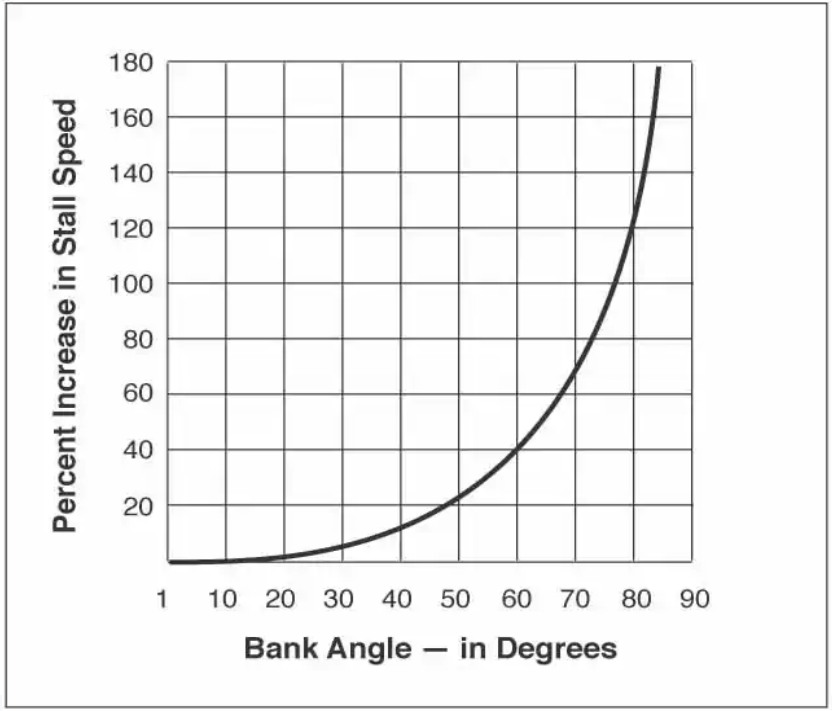
MANEUVER LOAD FACTOR = VIRTUAL WEIGHT GAIN



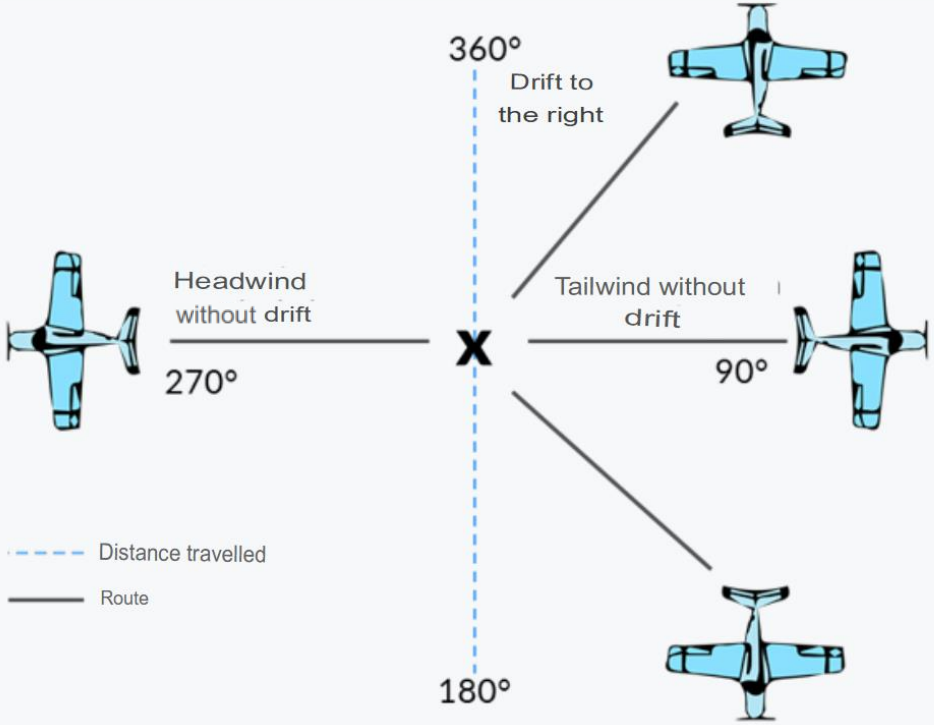
MANEUVER LOAD FACTOR = VIRTUAL WEIGHT GAIN



MANEUVER INCREASED STALL SPEED



MANEUVER INFLUENCE OF THE WIND IN MANEUVER



QUESTION TIME!

DRONESVIP
CAPACITATION