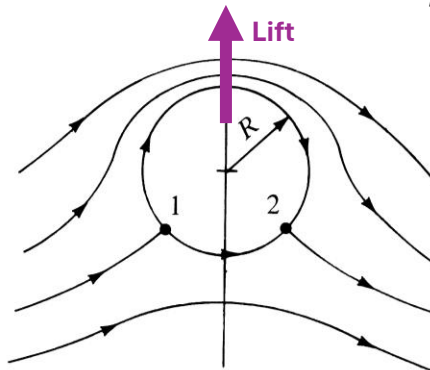


## (KEY CONCEPT) [B-4-2]

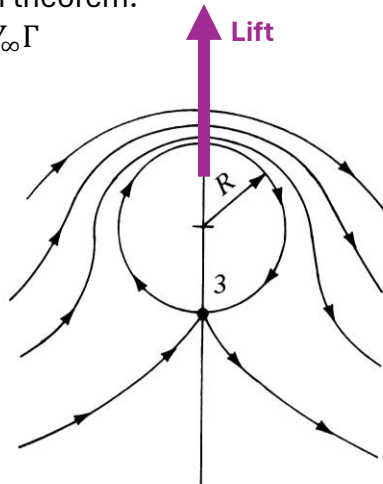
Kutta-Joukowski theorem:

$$L' = \rho_{\infty} V_{\infty} \Gamma$$



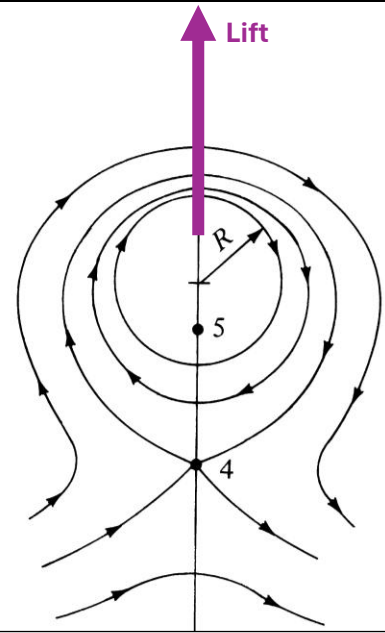
Lower circulation:  $\Gamma < 4\pi V_{\infty} R$

- 2 stagnation points
- Surface of the cylinder



Medium circulation:  $\Gamma = 4\pi V_{\infty} R$

- Single stagnation point
- Surface of the cylinder



Higher circulation:  $\Gamma > 4\pi V_{\infty} R$

- 2 stagnation points (one is inside of the body (trivial))
- Not surface of the cylinder

Potential flow field simulation (source: J.D. Anderson "Fundamentals of Aerodynamics" 2016)

Lined area for notes, consisting of multiple horizontal dashed lines.