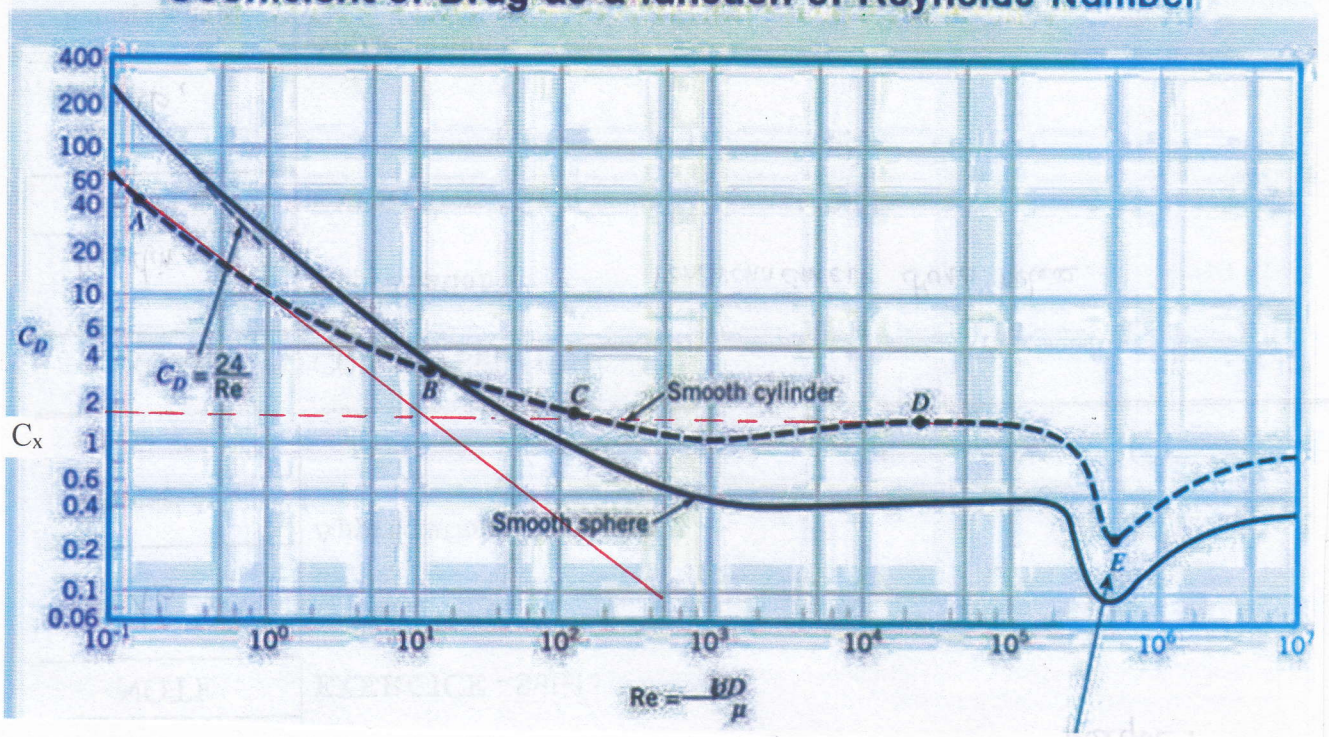
MF516 - Coefficient de traînée d'un cylindre



Pour $Re < 1$: $\log C_x = A + B \log Re$.

- $Re = 10^0 = 1$: $C_x = 10 \Rightarrow A = \log 10 = 1$
- Pente $B = \dfrac{\log(10/60)}{\log\left(\frac{10^0}{10^{-1}}\right)} = -\log 6 = -0{,}8$

$\Rightarrow \log C_x = \log \dfrac{10}{Re^{0,8}} \Rightarrow C_x = \dfrac{10}{Re^{0,8}} = \dfrac{10\,\nu^{0,8}}{U^{0,8} \cdot D^{0,8}}$

$$\vec{F} = 5\,\rho f \cdot \frac{\pi}{4} \cdot D^{1,2} \cdot \nu^{0,2} \cdot U^{0,2}\,\vec{U}$$

Pour $10^4 < Re < 10^5$: $C_x \simeq 1{,}6 \longrightarrow \vec{F} \simeq 0{,}8\,\rho f \frac{\pi}{4} D^2 \cdot U\vec{U}$