Formulas

Drag force

Here F_d is the drag force.

- $F_d \propto$ **Density**
- $F_d \propto$ **Area of the Object**
- $F_d \propto$ **velocity and object)**^{2}
- $F_d \propto$ **Coefficient of Drag**

The drag force is given by:

$$F_d = \frac{1}{2}\rho A V^2 C_d$$

where: - ρ is the fluid density, - A is the reference area, - V is the velocity, - C_d is the coefficient of drag.

Reynolds number formula:

$$R = \frac{\rho v l}{\mu}$$

where: - ρ is the fluid density, - v is the velocity of the object, - l is the characteristic length, - μ is the dynamic viscosity of the fluid.

Terminal Velocity

$$F_d = Gravity$$

$$\frac{1}{2}C_d \rho A V^2 = mg$$

$$V_t = \sqrt{\frac{2mg}{C_d A \rho}}$$

where:

- V_t is the terminal velocity
- m is the mass of the object,
- g is the gravitional velocity,
- C_d is the coefficient of drag.
- A is the reference area,
- ρ is the fluid density,