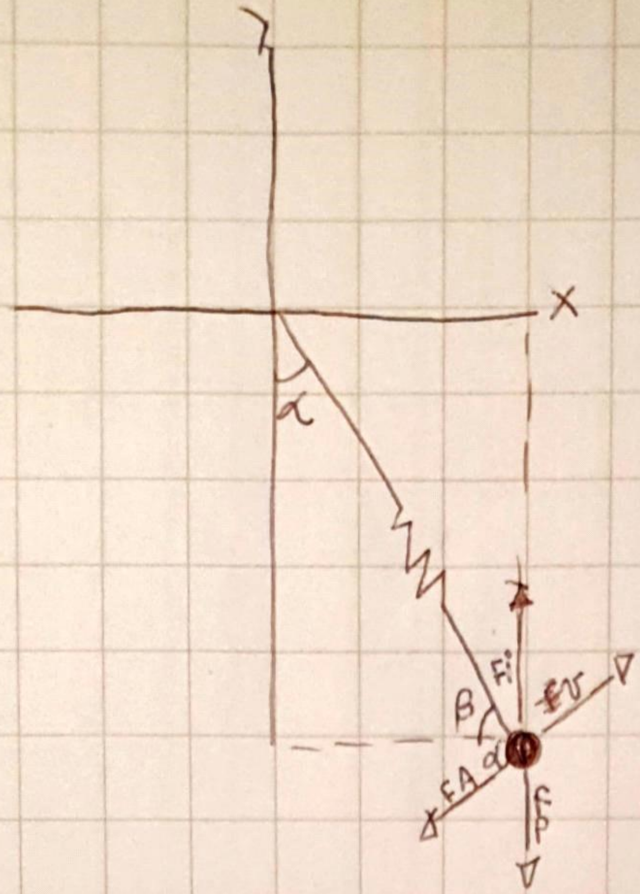
①



$$Fa = \frac{1}{2} \cdot \rho \cdot v^2 \cdot CD \cdot A$$

[redacted]

$$FP = m \cdot a$$

$$Fi = r$$

②

$$Rx = -FA \cdot \cos \alpha$$

[redacted]

$$Ry = -FP - Fa \cdot \operatorname{sen} \alpha$$

$$\cos \alpha = \frac{v_x}{\sqrt{v_x^2 + v_y^2}}$$

$$\operatorname{sen} \alpha = \frac{v_y}{\sqrt{v_x^2 + v_y^2}}$$

$$\frac{dx}{dt} = v_x$$

$$\frac{dv_x}{dt} = \frac{1}{m} \cdot \left(-\frac{1}{2} \cdot \rho \cdot v^2 \cdot CD \cdot A \cdot \frac{v_x}{\sqrt{v_x^2 + v_y^2}} \right)$$

$$\frac{dy}{dt} = v_y$$

$$\frac{dv_y}{dt} = \frac{1}{m} \cdot \left(-m \cdot g - \frac{1}{2} \cdot \rho \cdot v^2 \cdot CD \cdot A \cdot \frac{v_y}{\sqrt{v_x^2 + v_y^2}} \right)$$