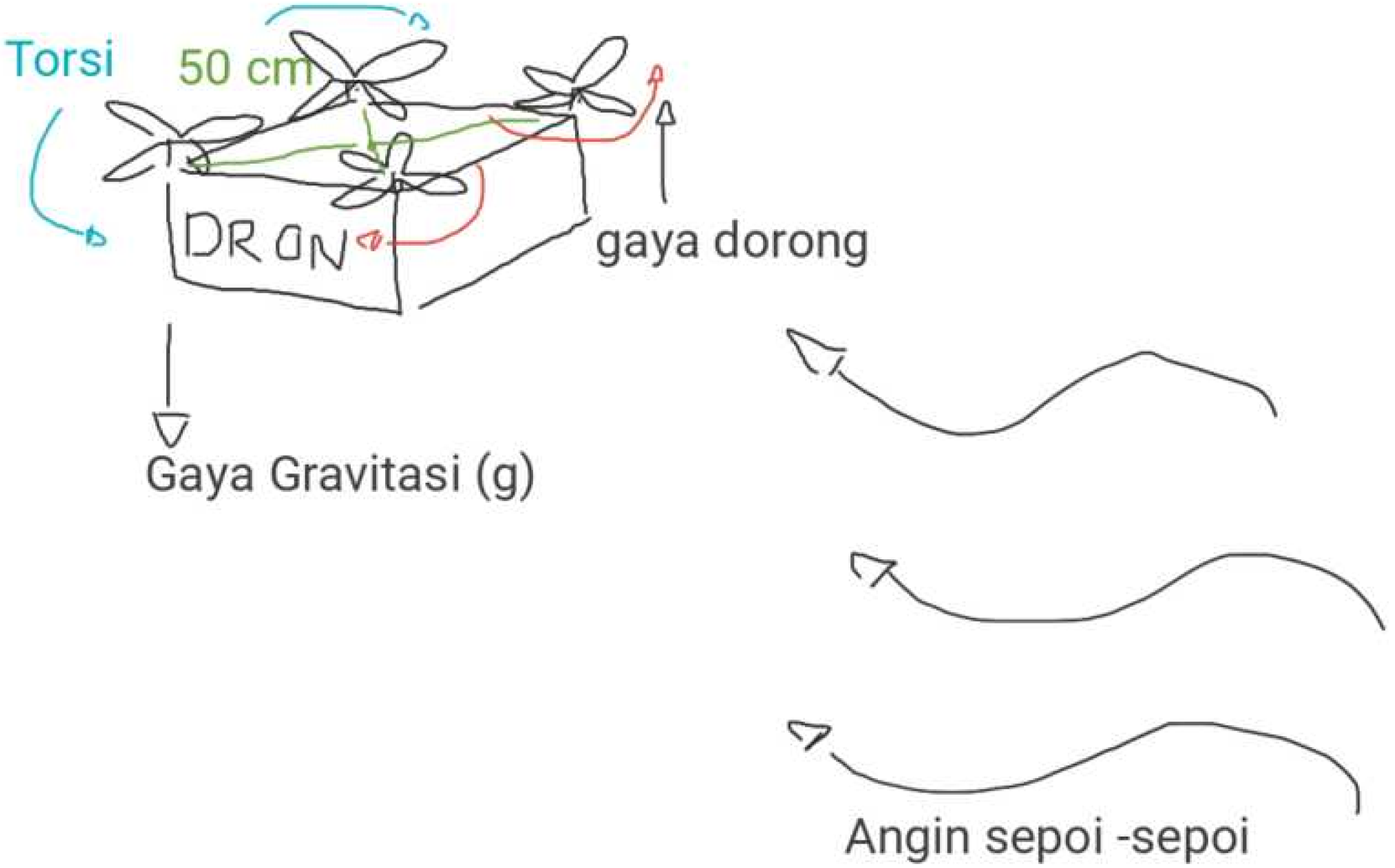
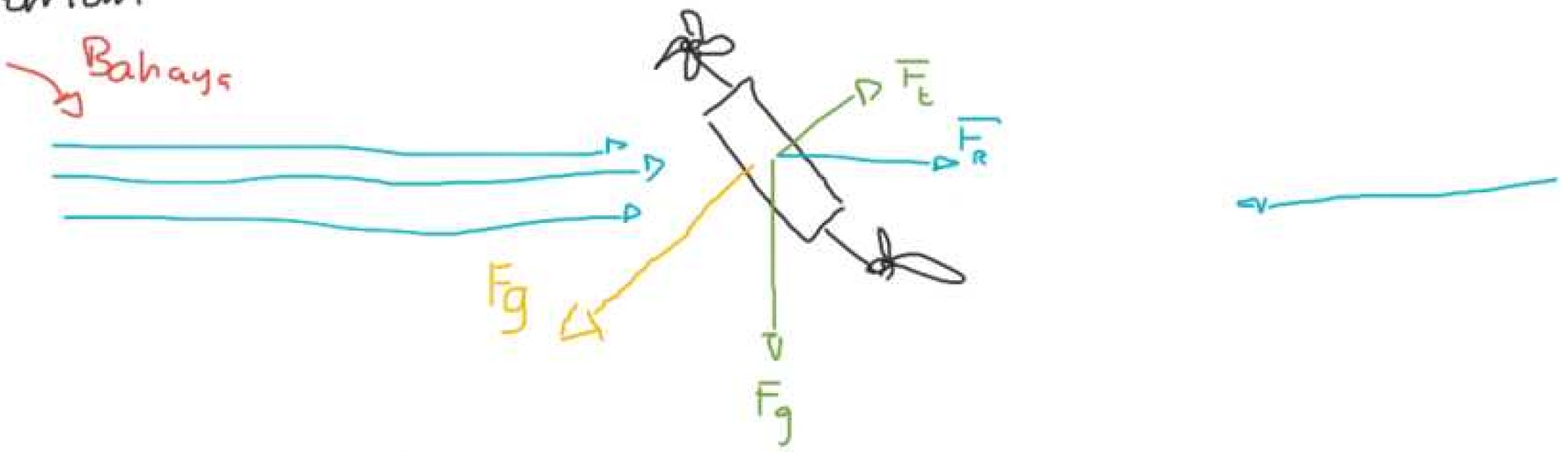

Torsi
50 cm
DRON
gaya dorong
Gaya Gravitasi (g)
Angin sepoi -sepoi


DRON

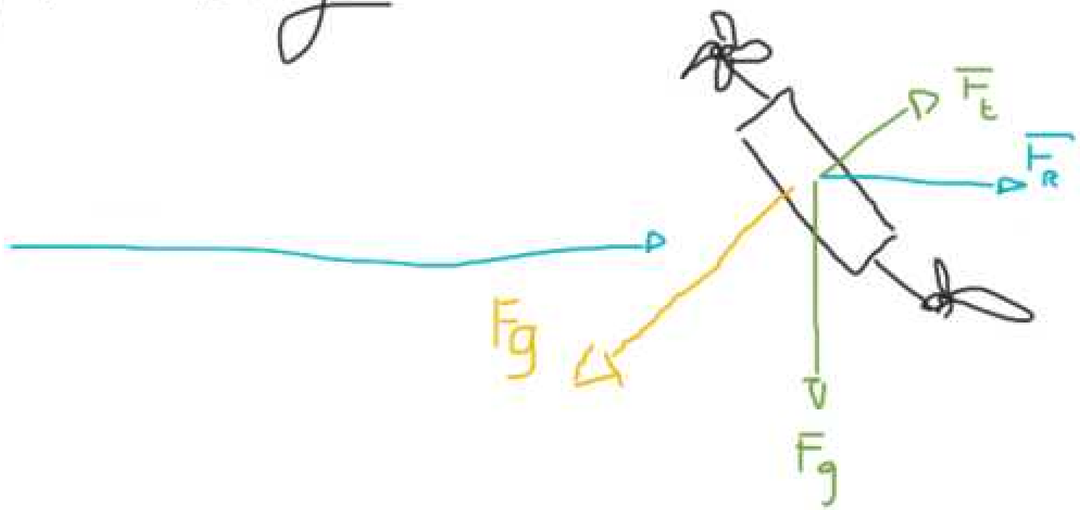

20 cm

Perjalanan

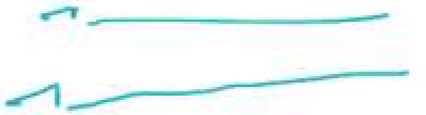


$F_{w_x} + \overline{F_R} >$ Kecelakaan !!!

Takeoff / landing

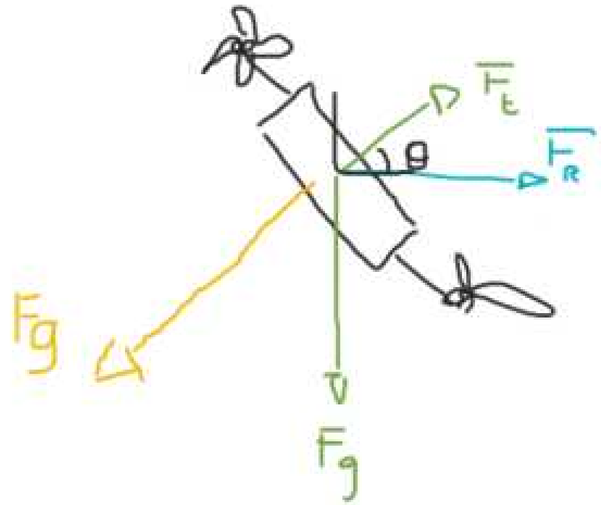


Bahaya !!



$F_{w_x} + \overline{F_R} > F_{\text{gesekan}}$!!!

Tanpa angin



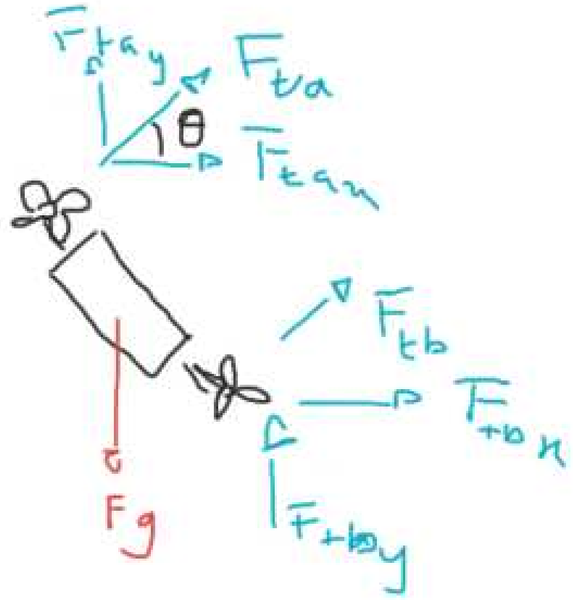
$$\sum F_y = \overline{F_t} \cos\theta - F_g = 0$$

$$F_t \cos\theta = F_g$$

$$\cos\theta = \frac{\overline{F_g}}{\overline{F_t}}$$

$$\cos^{-1} \frac{\overline{F_g}}{\overline{F_t}} = \theta$$

Tanpa angin

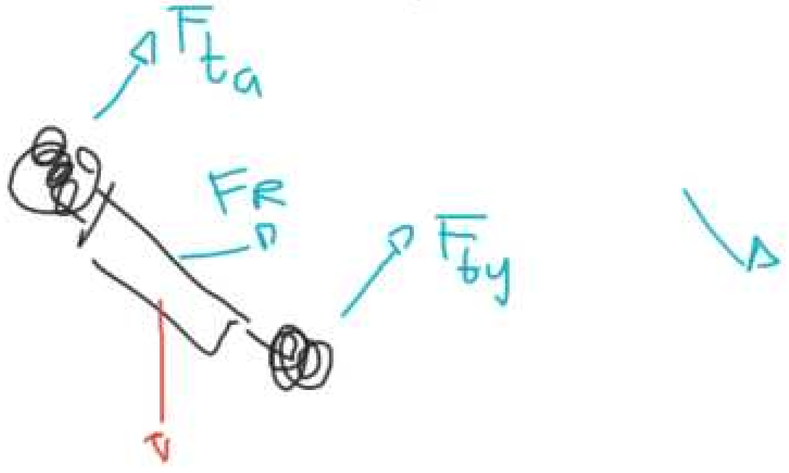


$$\Sigma F_y = F_{tay} + F_{tby} - F_g = 0$$

$$\sin\theta(F_{ta} + F_{tb}) = F_g$$

$$\sin^{-1}\frac{F_g}{(F_{ta} + F_{tb})} = \theta$$

$$\sin^{-1}\frac{14.715}{(7 + x)} = \theta$$



$$\sqrt{\left(\sin\theta\left(F_{+a}+F_{+b}\right)-F_g\right)^2+\left(\cos\theta\left(F_{+a}+F_{+b}\right)\right)^2}$$

$$\sin^2\theta\left(F_{+a}+F_{+b}\right)^2-2\sin\theta\left(F_{+a}+F_{+b}\right)F_g+F_g^2+$$

$$\sqrt{\left(F_{+a}+F_{+b}\right)^2-2\sin\theta\left(F_{+a}+F_{+b}\right)F_g}$$

$$\sqrt{\left(F_{+a}+F_{+b}\right)\left(F_{+a}+F_{+b}-2\sin\theta F_g\right)}=F_R$$

~~GLB~~ - GLBB

$F = ma \quad a = \frac{F}{m}$

$V_t = V_0 + at$

$a = -g$

$x = x_0 + V_0 t + \frac{1}{2} a t^2$

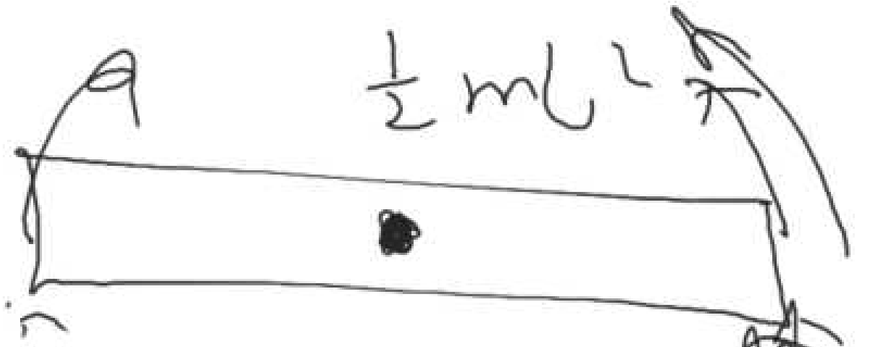
F tidal constan a tidal constan

$a = \frac{dv}{dt}$

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

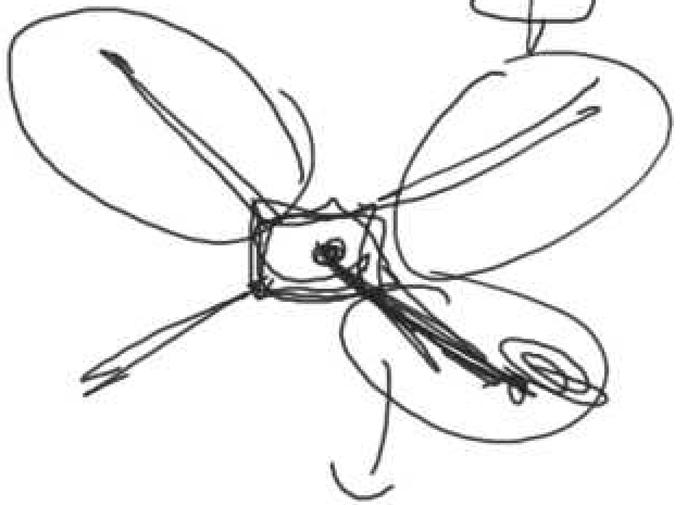
Phyton

Odeint



$\frac{1}{2}mL^2$

$\tau = r \times F$



$\frac{1}{3}mL^2$

$x \rightarrow \theta$

$V \rightarrow \omega$

$a \rightarrow \alpha$

$\omega = \frac{d\theta}{dt}$

$\alpha = \frac{d\omega}{dt}$

$\Sigma F = ma \rightarrow \Sigma \tau = I\alpha$

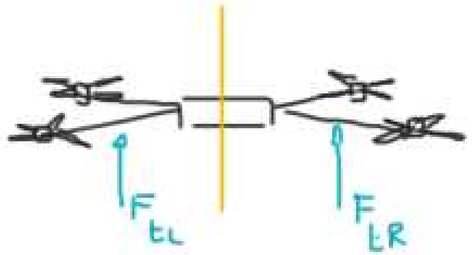
momen inersia

$\theta_t = \theta_0 + \omega_0 t + \frac{1}{2}\alpha t^2$

$$\Sigma\tau = I\alpha \qquad \omega = \frac{d\theta}{dt}$$

$$\alpha = \frac{d\omega}{dt}$$

Model Drone



$F_g = 14.715\text{N}$

$\Sigma F_y = F_g$

$\cos(\theta) \times (F_{tl} + F_{tr}) = F_g$

$\text{l} = \text{left, r= right}$

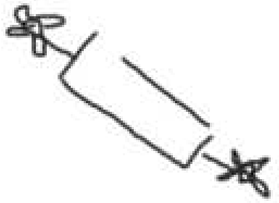
$\Sigma\tau_l = \Sigma F_l \times r = I_l\alpha_l$

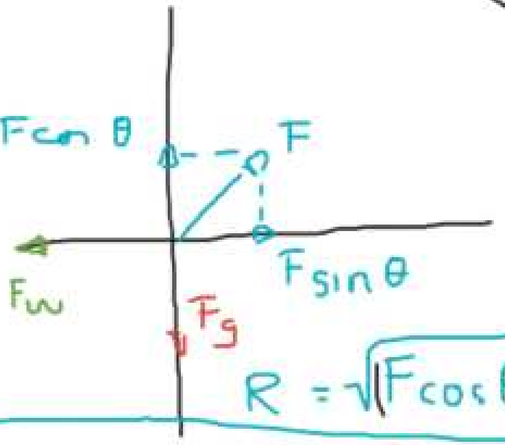
$\Sigma\tau_r = \Sigma F_r \times r = I_r\alpha_r$

$\Sigma I_l = \Sigma I_r = 2 \times \frac{1}{3}mL^2$

$$\Sigma\tau = 14 \times 0.5 = 4 \times \frac{1}{3} \times 1.5 \times 0.5^2 \times \alpha$$

$$\alpha = 7\ \text{rad.m.s}^{-2}$$

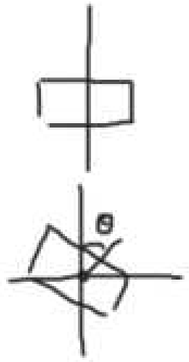




$$R = \sqrt{(F\cos\theta)^2 + (F\sin\theta - F_w)^2}$$

$$R = \sqrt{F - 2F_gF\cos\theta - 2F_wF\sin\theta + F_g^2 + F_w^2}$$

$$R = \sqrt{F + 2F\sin\theta\, F_w + F_w^2}$$



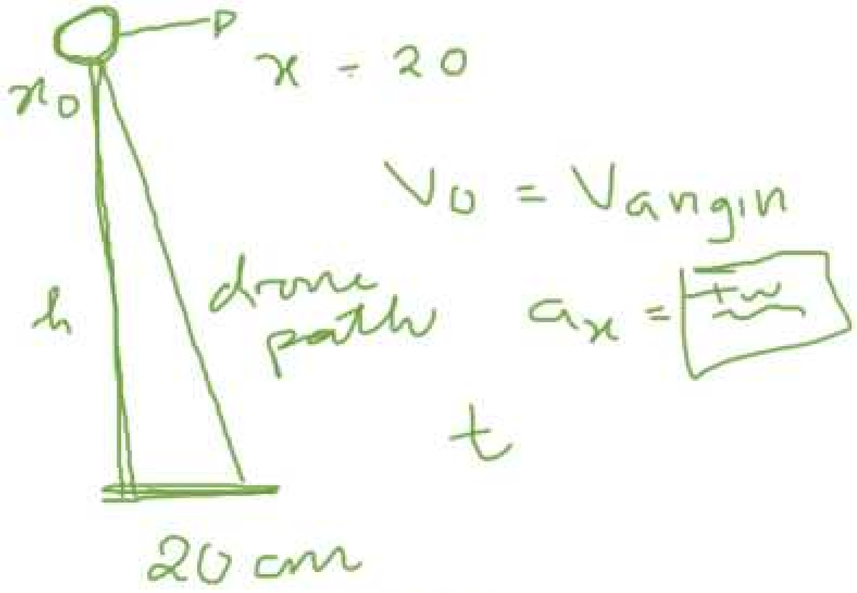
$$A(\theta) = \cos\theta\, A_1 + \sin\theta\, A_2$$

$$P_w = \frac{F_w}{A(\theta)}$$

$$P_w A(\theta) = F_w$$

$$0,613\, V^2 A(\theta)$$

$$V = \sqrt{\frac{F_w}{0,613\, A(\theta)}}$$



$$V_0 = V_{angin}$$

$$a_x = \frac{F_w}{m}$$

$$x = x_0 + V_0 t + \frac{1}{2} a t^2$$

h

$$V_t^2 = V_0^2 + 2ax$$

$$V_t = V_0 + at$$

$V_{max} = 24\ m/s$

$0.2\ m = V_{max}$