$$v = |\bar{v}| \neq \text{cost} \quad \Rightarrow \quad a_T = \frac{dv}{dt} \neq 0$$

$$\bar{a} = \bar{a}_T + \bar{a}_N$$

$$\Rightarrow \quad a = \sqrt{a_T^2 + a_N^2}$$

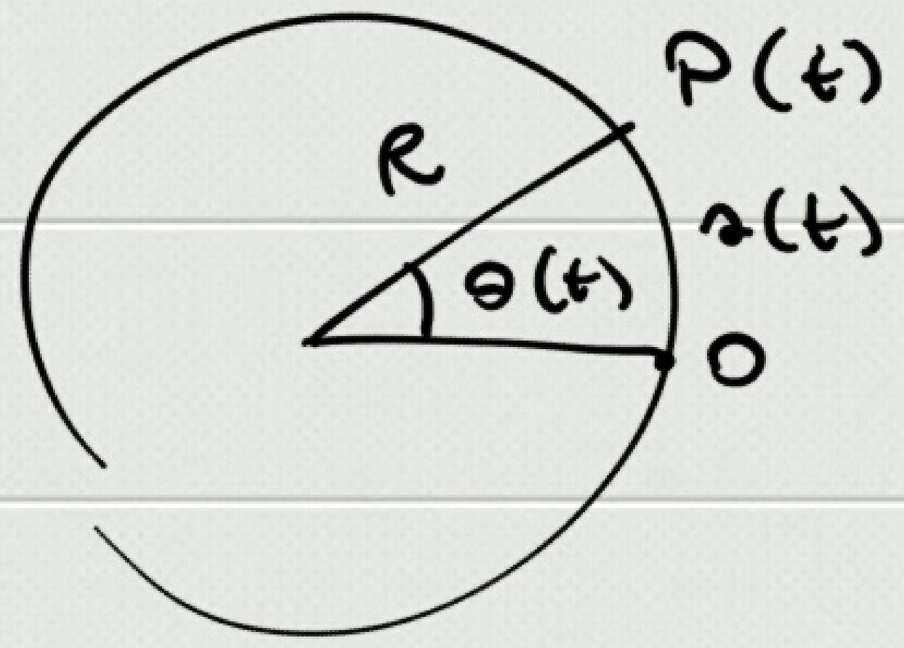
Moto circolare uniformemente accelerato :

$$\boxed{a_T = \text{cost}}$$

$$a_T = \frac{dv}{dt} = \frac{d^2 s}{dt^2}$$

$$\Rightarrow \int_{v_0}^{v(t)} dv = \int_0^t a_T \, dt \quad \Rightarrow \quad v(t) = v_0 + \int_0^t a_T \, dt = \underset{a_T = \text{cost}}{=} v_0 + a_T t$$

$$\int ds = \int v \, dt \quad \Rightarrow \quad s(t) = s_0 + v_0 t + \frac{1}{2} a_T t^2$$



$$\omega(t) = \frac{d\theta}{dt}$$

accelerazione angolare $\boxed{\alpha(t) = \frac{d\omega}{dt}}$

$$\int_{\omega_0}^{\omega(t)} d\omega = \int_0^t \alpha(t)\, dt \Rightarrow \omega(t) = \omega_0 + \int_0^t \alpha(t)\, dt$$

$$(\alpha = \text{cost}) \quad = \omega_0 + \alpha t$$

$$\omega = \frac{d\theta}{dt} \Rightarrow \int_{\theta_0}^{\theta(t)} d\theta = \int_0^t \omega(t)\, dt$$

$$\underset{\alpha = \text{cost}}{\Rightarrow} \boxed{\theta(t) = \theta_0 + \omega_0 t + \frac{1}{2}\alpha t^2}$$

$$\alpha = \frac{d\omega}{dt} = \frac{d}{dt}\left(\frac{v}{R}\right) = \frac{1}{R}\frac{dv}{dt} = \frac{a_T}{R}$$

$$\Rightarrow \boxed{\alpha = \frac{a_T}{R}} \qquad [\alpha] = \text{rad}/s^2$$

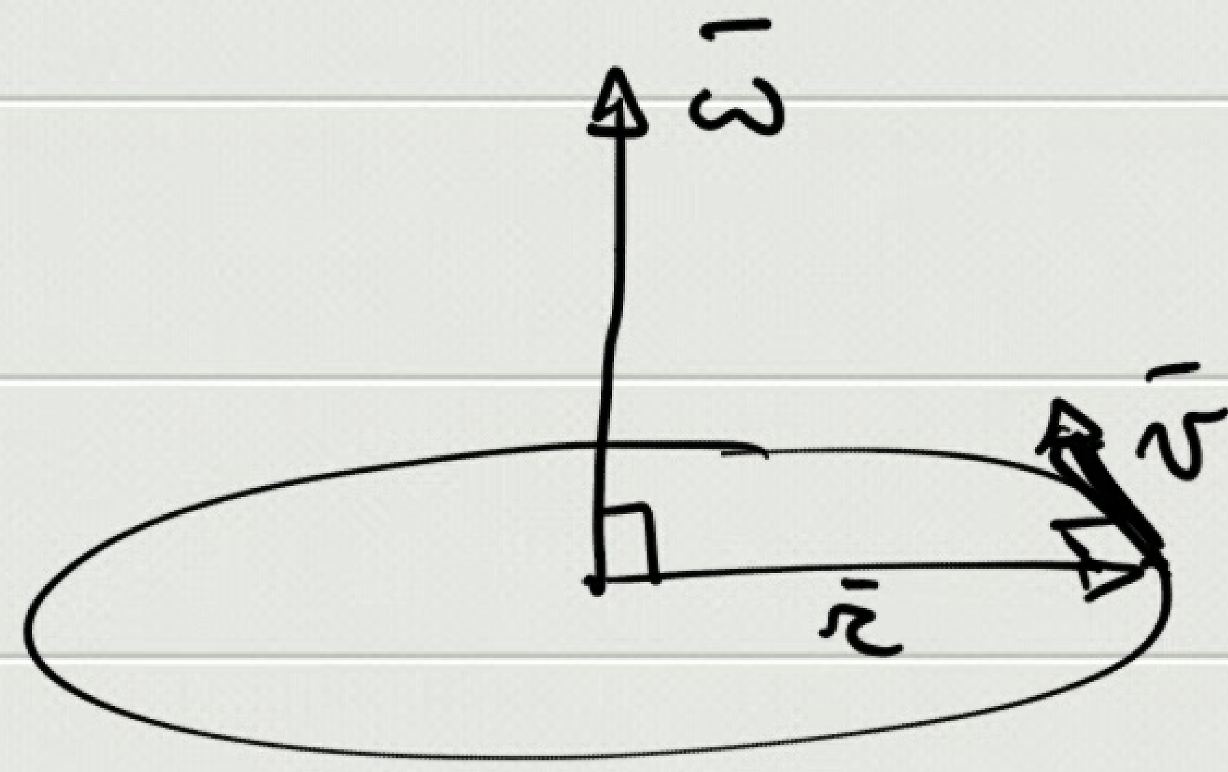
$$\alpha = \frac{d\omega}{dt} = \frac{d\omega}{d\theta}\frac{d\theta}{dt} = \omega \frac{d\omega}{d\theta}$$

$$\Rightarrow \int_{\omega_0}^{\omega(\theta)} \omega \, d\omega = \int_{\theta_0}^{\theta} \alpha \, d\theta \Rightarrow \frac{1}{2}\omega^2(\theta) - \frac{1}{2}\omega_0^2 = \int_{\theta_0}^{\theta} \alpha(\theta) d\theta$$

$$\Rightarrow \omega^2(\theta) = \omega_0^2 + 2\int_{\theta_0}^{\theta} \alpha(\theta) d\theta$$

$$\alpha = \text{cost} \Rightarrow \boxed{\omega^2(\theta) = \omega_0^2 + 2\alpha(\theta - \theta_0)}$$

$v = \omega R$



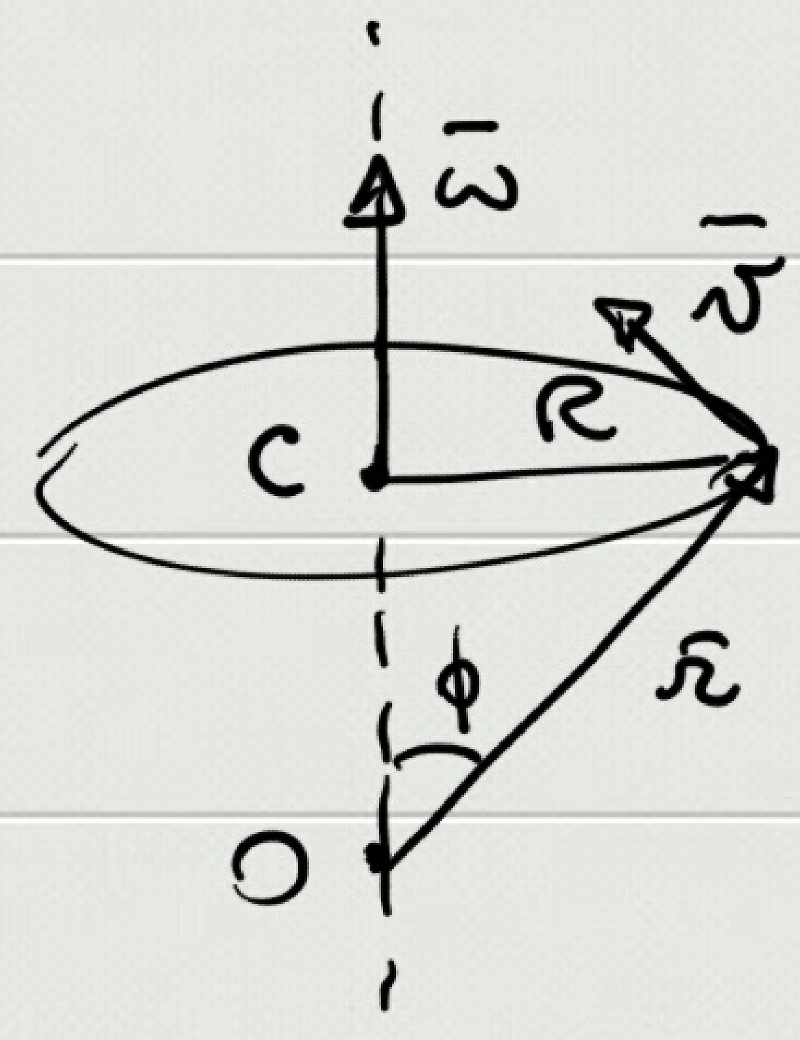
$$\boxed{\bar{v} = \bar{\omega} \times \bar{r}}$$

$$\boxed{\bar{\alpha} = \frac{d\bar{\omega}}{dt}} \qquad \bar{\alpha} \parallel \bar{\omega} \qquad |\bar{\alpha}| = \left|\frac{d\bar{\omega}}{dt}\right|$$

$$\bar{v} = \bar{\omega} \times \bar{r} \quad \Rightarrow \quad \bar{a} = \frac{d\bar{v}}{dt} = \frac{d}{dt}(\bar{\omega} \times \bar{r}) =$$

$$= \frac{d\bar{\omega}}{dt} \times \bar{r} + \bar{\omega} \times \frac{d\bar{r}}{dt} = \boxed{\bar{\alpha} \times \bar{r} + \bar{\omega} \times \bar{v} = \bar{a}_T + \bar{a}_N}$$

$$\boxed{\bar{a}_T = \bar{\alpha} \times \bar{r}} \qquad \boxed{\bar{a}_N = \bar{\omega} \times \bar{v}}$$



$\bar{v} = \bar{\omega} \times \bar{r}$

$v = \omega r \sin\phi = \omega R$