

Rang 2

$$\vec{R}_c = m \ddot{x}_1 \vec{x}'_1$$

$$\vec{R}_d = m \ddot{x}_1 \vec{x}'_1$$

Q1 $\ddot{x} = -R \cdot \ddot{\theta}$ Rev : $\ddot{x} = -R \ddot{\theta}$

Q2 $\vec{S}(C, \vec{y}_1) = C \cdot \ddot{\theta} \vec{y}$ Q3 $\vec{S}(C, \vec{y}_1) = C \cdot \ddot{\theta} \vec{y}$

~~Q4~~ $\vec{S}(R, \vec{y}_1) = \vec{S}(C, \vec{y}_1) + \vec{r}_{OC} \wedge m \cdot \vec{a}(C, \vec{y}_1)$
 $= C \ddot{\theta} \vec{y} + R \cdot \vec{y}'_1 \wedge m \cdot \ddot{x} \cdot \vec{x}'_1 = \boxed{(C \ddot{\theta} - m R \ddot{x}) \vec{y}}$

$\vec{S}(R, \vec{y}_1) = (C + m R^2) \ddot{\theta} \vec{y}$

Q4 $\left\{ \begin{matrix} \vec{F} \\ \vec{n}(n) \end{matrix} \right\} = \left\{ \begin{matrix} X \cdot \vec{x}'_1 + Y \cdot \vec{y}'_1 \\ 0 \end{matrix} \right\} \Big|_{\vec{n}}$

Q5 $\vec{P} = -m g \vec{y}_0 = -m g (\cos \alpha \vec{y}'_1 - \sin \alpha \vec{x}'_1)$
 $\vec{n}_0(n) = \vec{n}(C) + \vec{r}_{OC} \wedge \vec{P} = \vec{0} + R \vec{y}'_1 \wedge \vec{P} = \underline{-m g R \sin \alpha \vec{y}}$

PFD \Rightarrow
$$\begin{cases} m \ddot{x} = X + m g \sin \alpha & (1) \\ 0 = Y - m g \cos \alpha & (2) \\ (C + m R^2) \ddot{\theta} = -m g R \sin \alpha & (3) \end{cases}$$

$\Rightarrow (1) \Rightarrow \ddot{\theta} = \frac{-m g R \sin \alpha}{C + m R^2}$; $\ddot{x} = \frac{m g R^2 \sin \alpha}{C + m R^2}$

(2) $\Rightarrow Y = m g \cos \alpha$ $\Rightarrow \ddot{x} =$
 $\Rightarrow x = f(t, \text{const})$

(3) \Rightarrow
 (3) $\Rightarrow X = m \ddot{x} - m g \sin \alpha = \frac{m^2 g R^2 \sin \alpha}{C + m R^2} - \frac{m g \sin \alpha (C + m R^2)}{C + m R^2}$

$X = \frac{-m g \sin \alpha \cdot C}{C + m R^2}$

Resg $\Rightarrow \frac{|X|}{|Y|} < f \Rightarrow \frac{C \cdot \tan \alpha}{C + m R^2} < f$