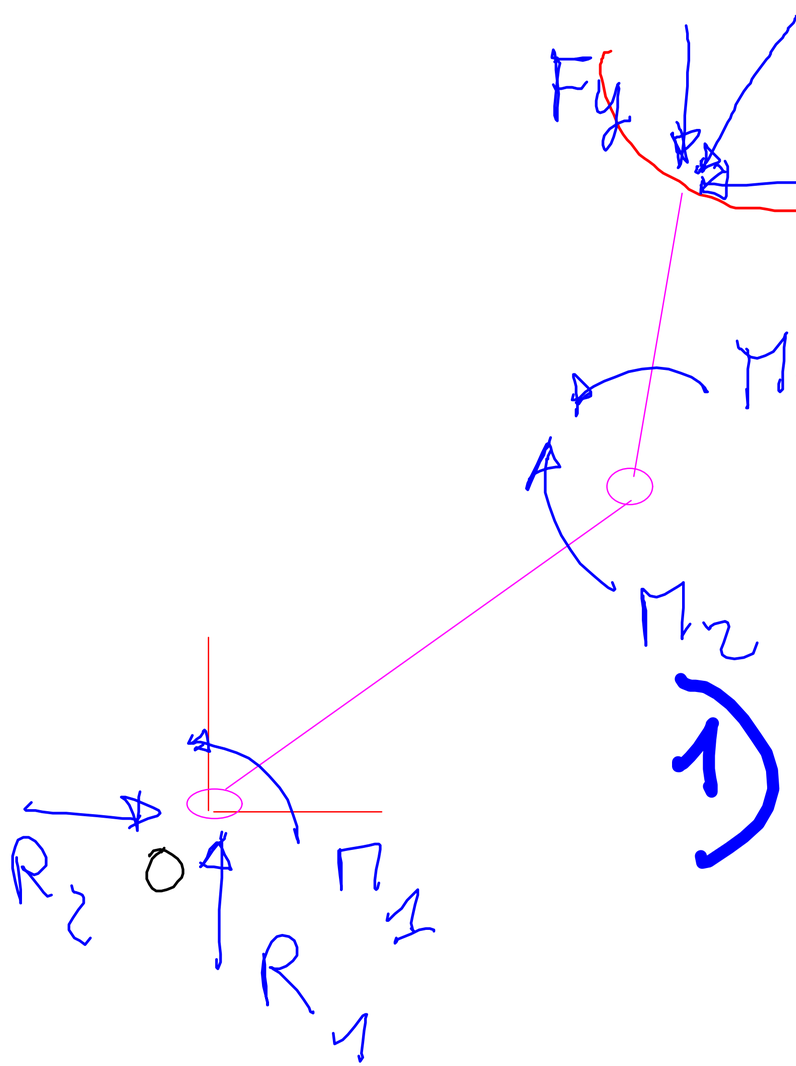


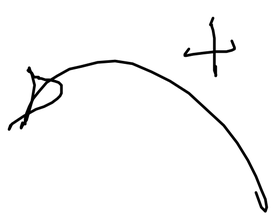
$$f = \begin{Bmatrix} F_x \\ F_y \end{Bmatrix}$$

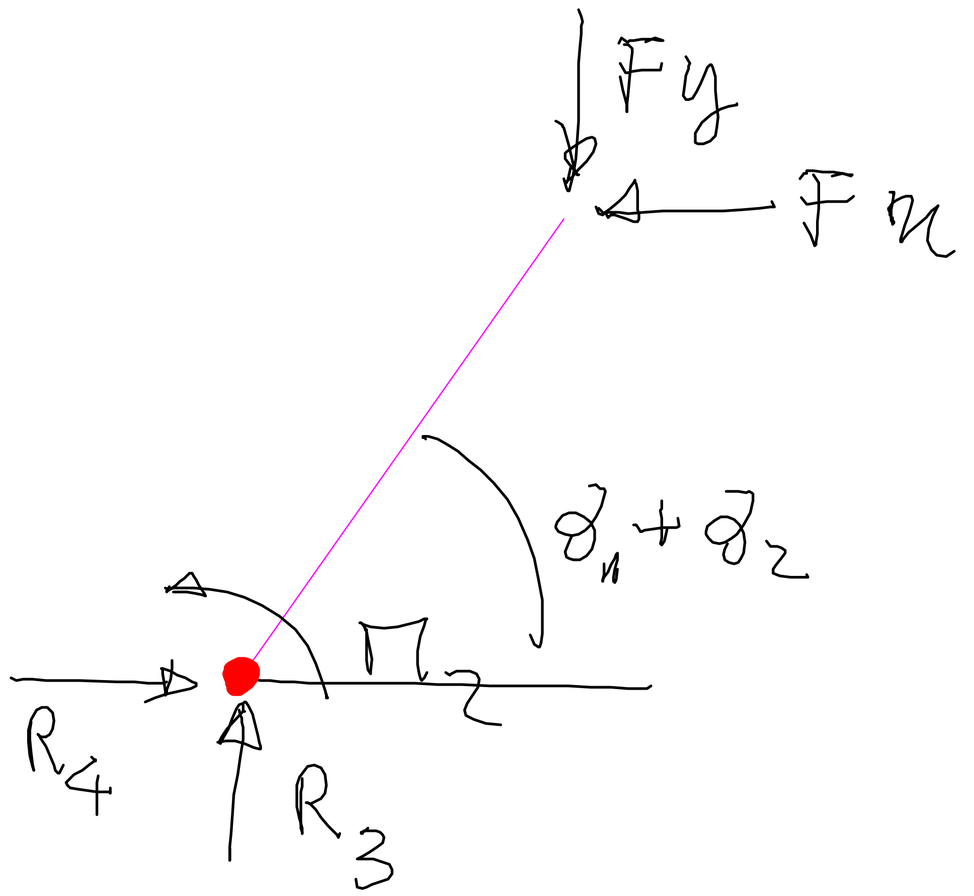
- polo "O"

$$M_1 + F_x y - F_y x = 0$$

$$x = l_1 c\vartheta_1 + l_2 c(\vartheta_1 + \vartheta_2)$$

$$y = l_1 s\vartheta_1 + l_2 s(\vartheta_1 + \vartheta_2)$$





2) $\Pi_2 + F_x l_2 s(\vartheta_1 + \vartheta_2) - F_y l_2 c(\vartheta_1 + \vartheta_2) = 0$

$$\begin{Bmatrix} M_1 \\ M_2 \end{Bmatrix} = \underbrace{\begin{bmatrix} -l_1 s\theta_1 - l_2 s(\theta_1+\theta_2) & l_1 c\theta_1 + l_2 c(\theta_1+\theta_2) \\ -l_2 s(\theta_1+\theta_2) & l_2 c(\theta_1+\theta_2) \end{bmatrix}^T}_{J^T} \begin{Bmatrix} F_x \\ F_y \end{Bmatrix}$$

τ $\qquad$ $\qquad$ f

$$\boxed{\tau = J^T f}$$

$$f = (J^T)^{-1} \tau$$