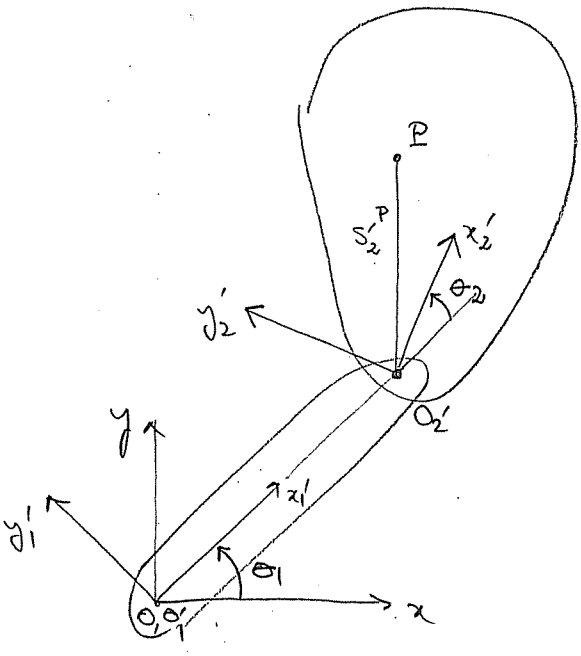
EXAMPLE 2.4.1



length $O_1'O_2' = 5$

$$s_2'^P = \begin{bmatrix} 3 \\ 2 \end{bmatrix}$$

$$\vec{OP} = \vec{O_1O_2} + \vec{O_2'P}$$

$$\vec{O_1'O_2'} = A_1 \begin{bmatrix} 5 \\ 0 \end{bmatrix} + A_2 \begin{bmatrix} 3 \\ 2 \end{bmatrix}$$

$$A_1 = \begin{bmatrix} c\theta_1 & -s\theta_1 \\ s\theta_1 & c\theta_1 \end{bmatrix} \qquad A_2 = \begin{bmatrix} c(\theta_1+\theta_2) & -s(\theta_1+\theta_2) \\ s(\theta_1+\theta_2) & c(\theta_1+\theta_2) \end{bmatrix}$$

$$\Rightarrow \vec{OP} = \begin{bmatrix} c\theta_1 & -s\theta_1 \\ s\theta_1 & c\theta_1 \end{bmatrix} \begin{bmatrix} 5 \\ 0 \end{bmatrix} + \begin{bmatrix} c(\theta_1+\theta_2) & -s(\theta_1+\theta_2) \\ s(\theta_1+\theta_2) & c(\theta_1+\theta_2) \end{bmatrix} \begin{bmatrix} 3 \\ 2 \end{bmatrix}$$

$$= \begin{bmatrix} 5c\theta_1 + 3c(\theta_1+\theta_2) - 2s(\theta_1+\theta_2) \\ 3.5s(\theta_1+\theta_2) + 2c(\theta_1+\theta_2) \end{bmatrix}$$

(*)