

lufo

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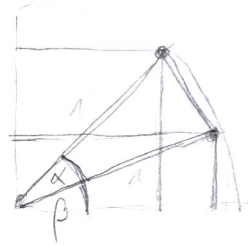
p_1
 $\text{abspos}(p_1) = q$
 $\text{dist}(p_1, p_2) = d_1$
 $\text{dist}(p_1, p_3) = d_3$
 $\text{angle}(p_2, p_1, p_3) = \alpha_1$

$[a_q, v_q]$
 $[a_1, a_2, d_1, v_1], [a_1, a_2, d_1, v_2]$

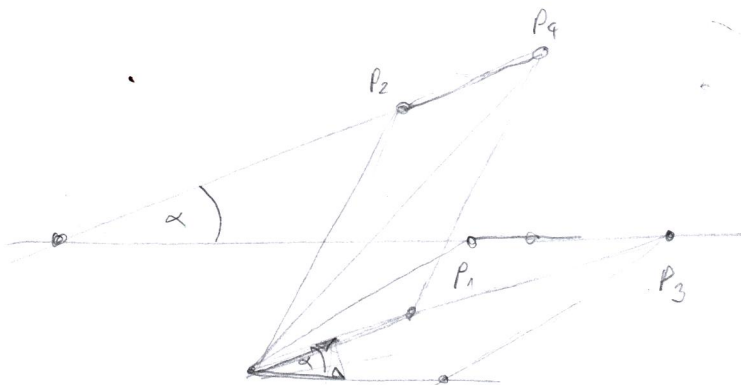
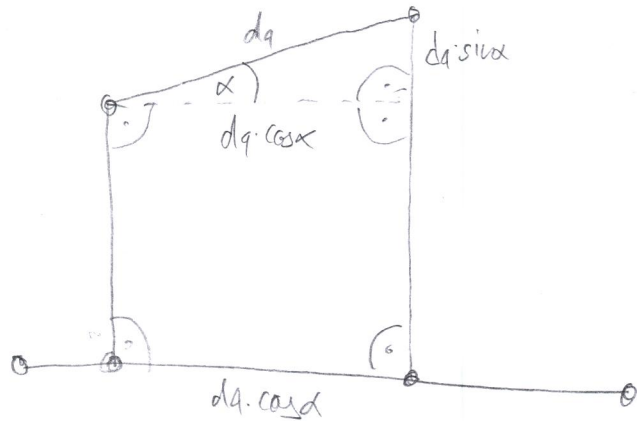
p_2
 $\text{dist}(p_2, p_1) = d_1$
 $\text{dist}(p_2, p_4) = d_4$
 $\text{angle}(p_2, p_1, p_3) = \alpha_1$

p_3
 $\text{dist}(p_3, p_1) = d_2$
 $\text{dist}(p_3, p_4) = d_3$
 $\text{angle}(p_2, p_1, p_3) = \alpha_1$
 $\text{absangle}(p_3, p_4) = \alpha_2$

p_4
 $\text{dist}(p_4, p_2) = d_4$
 $\text{dist}(p_4, p_3) = d_3$
 $\text{absangle}(p_4, p_3) = \alpha_2$



$$\beta = \tan^{-1} \frac{v_{13y}}{v_{13x}}$$



$$p_{24} = p_4 - p_2$$

$$p_{13} = p_3 - p_1$$

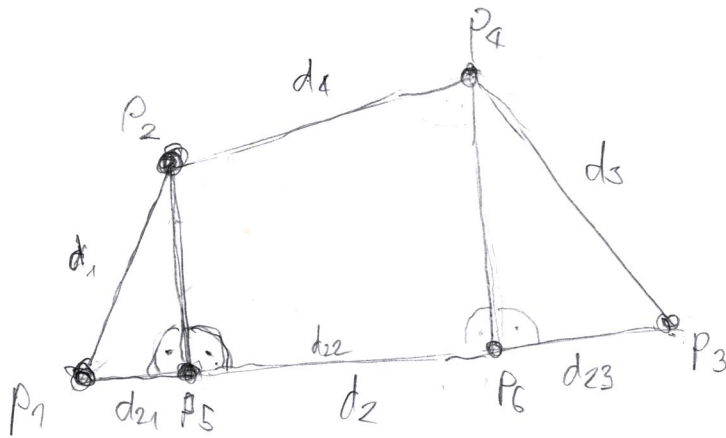
$$p_q = p_{24} + p_2$$

$$= d_4 \cdot v_{2a} + a_2 \cdot v_2$$

$$v_{24} = p_{24} / a_{2a}$$

$$v_{13} = p_{13} / a_{13}$$

$$v_{2a} = \begin{bmatrix} \cos(\alpha + \beta) \\ \sin(\alpha + \beta) \end{bmatrix}$$



$$\text{dist}(P_1, P_2) = d_1$$

$$\text{dist}(P_1, P_3) = d_2$$

$$\text{dist}(P_2, P_4) = d_4$$

$$\text{dist}(P_3, P_4) = d_3$$

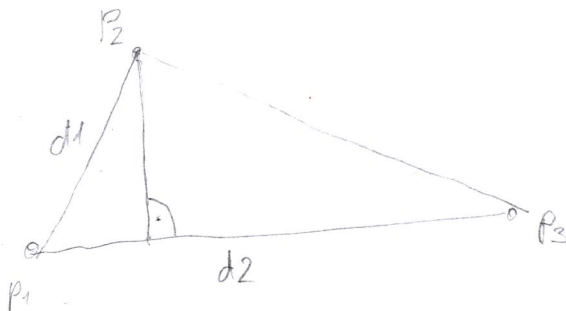
$$\text{angle}(P_1, P_3, P_2, P_4) = \alpha_1$$

$$\text{angle}(P_2, P_5, P_3) = \pi/2$$

$$\text{angle}(P_2, P_5, P_1) = \pi/2$$

$$\text{angle}(P_4, P_2, P_5) = \pi/2 + \alpha_1$$

CS P_1		CS P_2		CS P_3	
$P_1 P_2 P_3$	d_1, d_2	$P_2 P_3 P_4$	d_3, d_4	$P_3 P_4 P_5$	d_3
$P_1 P_2 P_4$	d_1, d_4	$P_2 P_3 P_5$	$\pi/2$		
$P_1 P_2 P_5$	$d_1, \pi/2$	$P_2 P_4 P_5$	d_4, α_1		
$P_1 P_3 P_4$	d_2, d_3				
$P_1 P_3 P_5$	d_2				
$P_1 P_4 P_5$					



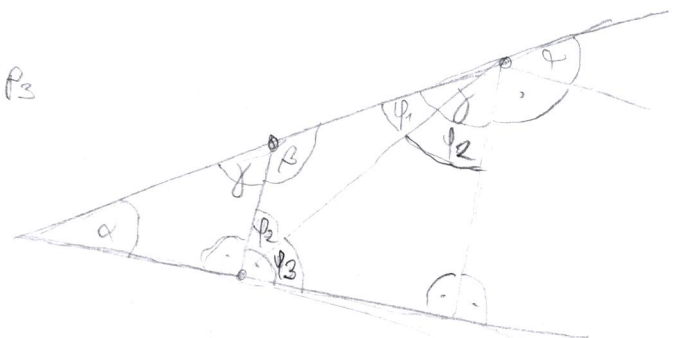
$$\beta = \pi - \gamma = \pi/2 + \alpha$$

$$\gamma = \pi/2 - \alpha$$

$$\varphi_1 + \varphi_2 + \beta = \pi$$

$$\varphi_1 + \varphi_4 = \gamma$$

$$\varphi_2 + \varphi_3 = \pi/2$$



$$\varphi_3 = \pi/2 - \varphi_4 = \pi/2 - \varphi_2$$

$$\varphi_4 - \varphi_2 = 0 \Rightarrow \varphi_4 = \varphi_2$$

$$2\varphi_1 + 2\varphi_2 = \pi - 2\alpha$$

$$\varphi_1 + \varphi_2 = \pi/2 - \alpha \Rightarrow \varphi_2 = \pi/2 - \alpha - \varphi_1$$

$$\varphi_1 + \varphi_2 + \pi/2 + \alpha = \pi : \varphi_1 + \varphi_2 = \pi/2 - \alpha$$

$$\varphi_1 + \varphi_4 = \pi/2 - \alpha$$

$$\varphi_2 + \varphi_3 = \pi/2 =$$

$$\varphi_3 + \varphi_4 = \pi/2$$