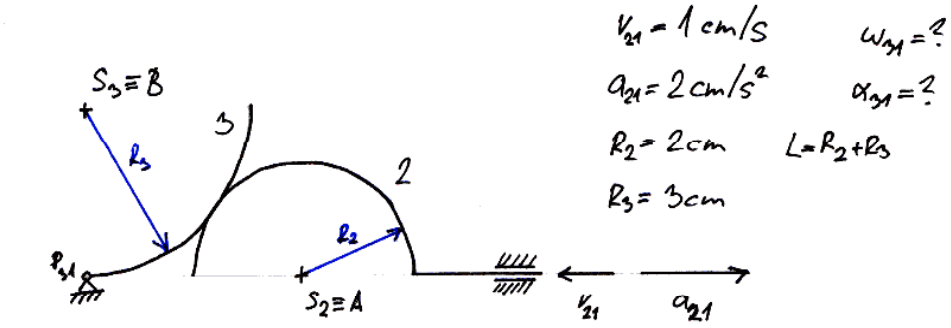
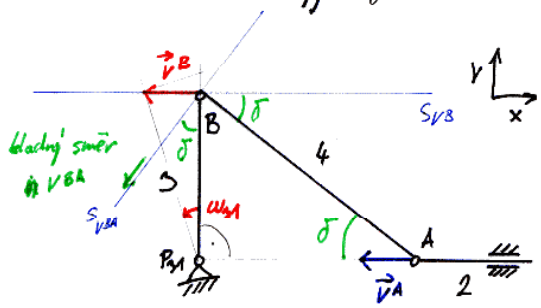
Znáš $v21$ a $a21$, urči $\omega 31$ a $\alpha 31$



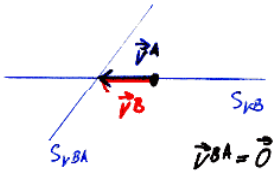
→ náhradní mechanismus jeho grafické řešení



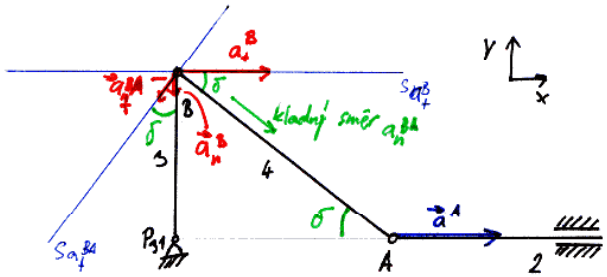
$\vec{v}_A = \vec{v}_{21}$

$\vec{v}_B = \vec{v}_A + \vec{v}_{BA}$

$\vec{x} \quad \vec{=} \quad \vec{x}$



$\vec{v}_{BA} = \vec{0}$



$\vec{a}^A = \vec{a}_{21}$

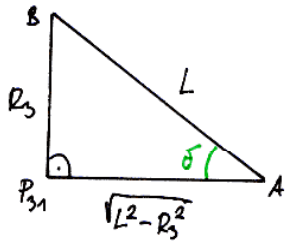
$\vec{a}^B = \vec{a}^A + \vec{a}^{BA}$

$\wedge \quad \vec{=} \quad \wedge$

$t \; n \qquad t \; n$

$\vec{x} \; \vec{=} \qquad \vec{x} \; \vec{0} \; (\vec{v}_{BA} = \vec{0})$

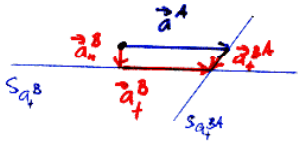
Geometrie mechanismu:



$\sin\delta = \frac{R}{L}$

$\cos\delta = \frac{\sqrt{L^2 - R_3^2}}{L}$

$tg\,\delta = \frac{R_3}{\sqrt{L^2 - R_3^2}}$



Analytické řešení vychází z grafického

$\vec{v}^B = \vec{v}^A + \vec{v}^{BA}$

$v^A = v_{21}$

x: $-v_B^B = -v^A - v^{BA} \cdot \sin\delta$

y: $0 = 0 - v^{BA} \cdot \cos\delta \rightarrow v^{BA} = 0$

$v^B = v^A = v_{21}$

$\omega_{31} = \frac{v^B}{R_3} = \frac{v_{21}}{R_3}$

$a^A = a_{21}$

$\vec{a}^B = \vec{a}^A + \vec{a}^{BA}$

$+n$ $+n$

$a_n^B = \frac{v^{B^2}}{R_3} = \frac{v_{21}^2}{R_3}$

$a_n^{BA} = \frac{v^{BA^2}}{L} = 0$

x: $a_t^B + 0 = a^A - a_t^{BA} \cdot \sin\delta + a_n^{BA} \cdot \cos\delta$

y: $0 - a_n^B = 0 - a_t^{BA} \cdot \cos\delta - a_n^{BA} \cdot \sin\delta$

$a_t^{BA} = \frac{a_n^B}{\cos\delta}$

$a_t^B = a^A - \frac{a_n^B}{\cos\delta} \cdot \sin\delta = a^A - a_n^B \cdot tg\,\delta$

$\varepsilon_{31} = \frac{a_t^B}{R_3}$

$\varepsilon_{31} = \frac{a_{21}}{R_3} - \frac{v_{21}^2}{R_3^2} \cdot \frac{R_3}{\sqrt{L^2 - R_3^2}} = \frac{a_{21}}{R_3} - \frac{v_{21}^2}{R_3\sqrt{L^2 - R_3^2}}$