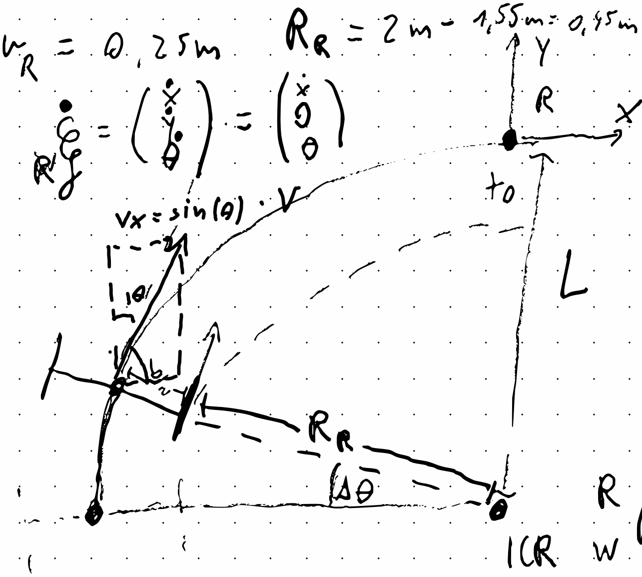
HÜ 1.2

$$\dot{\varphi} = 10\,\frac{rad}{s} = \dot{\varphi}_L = \dot{\varphi}_R \qquad L = 2\,m$$

$$r_R = 0{,}25\,m \qquad R_R = 2\,m - 1{,}55\,m = 0{,}45\,m$$

$$\dot{\xi}_R = \begin{pmatrix} \dot{x} \\ \dot{y} \\ \dot{\theta} \end{pmatrix} = \begin{pmatrix} \dot{x} \\ 0 \\ \theta \end{pmatrix}$$



$$\alpha_L = 90°$$
$$\alpha_R = -90°$$
$$\beta_L = 0°$$
$$\beta_R = 180°$$
$$l_L = l_R = 1{,}55\,m$$

$${}^R_W R = \begin{bmatrix} c\theta & -s\theta & 0 \\ s\theta & c\theta & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$\begin{pmatrix} J_1(\beta_s) \\ C_1(\beta_s) \end{pmatrix} \cdot {}_R\dot{\xi} = \begin{pmatrix} J_2\,\vec{\dot{\varphi}} \\ 0 \\ 0 \end{pmatrix} \quad \odot$$

$$[\sin(\alpha+\beta) \quad -\cos(\alpha+\beta) \quad (-l)\cos(\beta)] \cdot \begin{pmatrix} \dot{x} \\ 0 \\ \dot{\theta} \end{pmatrix} = \dot{\varphi}_R \cdot r_R$$

$$[\sin(\alpha+\beta) \quad -\cos(\alpha+\beta) \quad (-l)\cos(\beta)] \cdot \begin{pmatrix} \dot{x} \\ 0 \\ \theta \end{pmatrix} = \dot{\varphi}_L \cdot r_R$$

$$r_R \cdot \dot{\varphi}_R = V_R$$

$$0{,}25\,m \cdot 10\,\frac{rad}{s} = 2{,}5\,\frac{m}{s}$$

$$\dot{\theta} = \frac{r_R \cdot \dot{\varphi}_R}{L_R}$$

$$r \cdot \Delta\theta = V$$

$$\dot{\theta} = \frac{V}{r} = \frac{2{,}5\,\frac{m}{s}}{0{,}45\,m} = -5{,}58\,\frac{rad}{s}$$

$$-\ell \cdot \cos(\beta)$$

$$\begin{bmatrix} \sin(\alpha+\beta) & -\cos(\alpha+\beta) & (-\ell)\cos(\beta) \end{bmatrix} \cdot \begin{pmatrix} \vec{\dot{x}} \\ 0 \\ \dot{\theta} \end{pmatrix} = \dot{\varphi}_R \cdot v_R$$

$$\sin(\alpha+\beta)\cdot\vec{\dot{x}} + \dot{\theta}\cdot(-\ell)\cdot\cos(\beta) = \dot{\varphi}_R \cdot v_R$$

$$\vec{\dot{x}} = \frac{\varphi_R \cdot v_R - \dot{\theta}\cdot(-\ell)\cdot\cos(\beta)}{\sin(\alpha+\beta)}$$

$v_R = 0{,}25\,m$

$\dot{\varphi}_R = 10\,\frac{rad}{s}$

$\alpha_R = -90^\circ$

$\beta_R = 180^\circ$

$\theta = -5{,}56\,\frac{rad}{s}$

$$\begin{bmatrix} 1 & 0 & +1{,}55 \end{bmatrix} \cdot \begin{pmatrix} \vec{\dot{x}} \\ 0 \\ -5{,}56 \end{pmatrix}$$

$\alpha_L = 90^\circ$

$\beta_L = 0^\circ$

$$\vec{\dot{x}} - \left(1{,}55\,m \cdot 5{,}56\,\frac{rad}{s}\right) = 10\,\frac{rad}{s}\cdot 0{,}25\,m \quad \dot{\theta}$$

$$\vec{\dot{x}} = 2{,}5\,\frac{m}{s} + 1{,}55\,m \cdot 5{,}56\,\frac{rad}{s} = \underline{11{,}12\,\frac{m}{s}}$$

$$\begin{bmatrix} \sin(\alpha+\beta) & -\cos(\alpha+\beta) & (-\ell)\cos(\beta) \end{bmatrix} \cdot \begin{pmatrix} \vec{\dot{x}} \\ 0 \\ \dot{\theta} \end{pmatrix} = \dot{\varphi}_L \cdot v_L$$

$$\begin{bmatrix} 1 & 0 & -1{,}55\,m \end{bmatrix} \cdot \begin{pmatrix} 11{,}12\,\frac{m}{s} \\ 0 \\ -5{,}56\,\frac{rad}{s} \end{pmatrix} \frac{1}{\varphi_L} = v_L$$

$$\left(11{,}12\,\frac{m}{s} + 1{,}55\,m \cdot 5{,}56\,\frac{rad}{s}\right)\cdot\frac{1}{10\,\frac{1}{s}} = \underline{1{,}97\,m}$$

$$\left(\sin(\alpha+\beta)\cdot\vec{\dot{x}} + (-\ell)\cdot\cos(\beta)\cdot\dot{\theta}\right)\cdot\frac{1}{\varphi_L} = v_L$$