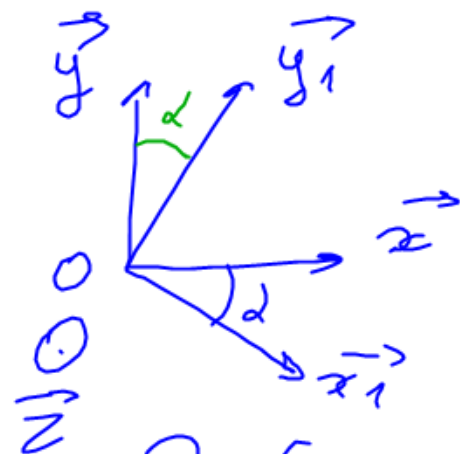
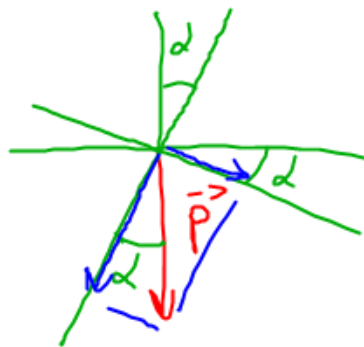


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[illegible]
$$\mathcal{R}: \{0, \vec{x}, \vec{y}, \vec{z}\}$$
$$R_1: \{0, \vec{x}_1, \vec{y}_1, \vec{z}\}$$

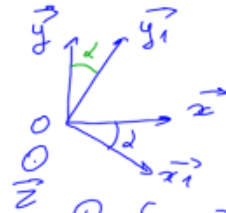
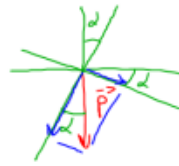
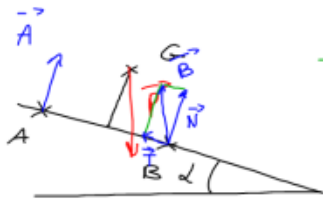
BAME:

$$\overrightarrow{A_{0 \rightarrow 1}} = \begin{pmatrix} 0 \\ y_A \\ 0 \end{pmatrix}_{R_1} = y_A \cdot \overrightarrow{y_1}$$

$$\vec{R}_{0 \rightarrow 1} = \begin{pmatrix} -T_B \\ N_B \\ 0 \end{pmatrix}_{R_1} = -T_B \vec{x}_1 + N_B \vec{y}_1$$

$$\vec{p}_{\text{res}} \rightarrow 1 = \begin{pmatrix} 0 \\ 0 \\ -13350 \\ 0 \end{pmatrix} \Big|_{R_1} = -13350 \cdot \vec{y} = \begin{pmatrix} 13350 \sin \alpha \\ -13350 \cos \alpha \\ 0 \end{pmatrix} \Big|_{R_1} = 13350 \sin \alpha \cdot \vec{x}_1 - 13350 \cos \alpha \cdot \vec{y}_1$$

SI:



$$R: \{0, \vec{x}_1, \vec{y}_1, \vec{z}_1\}$$

$$R_1: \{0, \vec{x}_1, \vec{y}_1, \vec{z}_1\}$$

BAME:

$$\vec{A}_{0 \rightarrow 1} = \begin{pmatrix} 0 \\ Y_A \\ 0 \end{pmatrix}_{R_1} = Y_A \cdot \vec{y}_1$$

$$\vec{B}_{0 \rightarrow 1} = \begin{pmatrix} -T_B \\ N_B \\ 0 \end{pmatrix}_{R_1} = -T_B \vec{x}_1 + N_B \vec{y}_1$$

$$\vec{P}_{0 \rightarrow 1} = \begin{pmatrix} 0 \\ -13350 \\ 0 \end{pmatrix}_R = -13350 \vec{y} = \begin{pmatrix} 13350 \sin \alpha \\ -13350 \cos \alpha \\ 0 \end{pmatrix}_{R_1} = 13350 \sin \alpha \cdot \vec{x}_1 - 13350 \cos \alpha \cdot \vec{y}_1$$

$$\vec{u} \wedge \vec{v} = \|\vec{u}\| \|\vec{v}\| \sin(\vec{u}, \vec{v}) \cdot \vec{w}$$

AFS:

$$\sum \vec{F} \cdot \vec{x}_1 = 0 : -T + 13350 \sin \alpha = 0$$

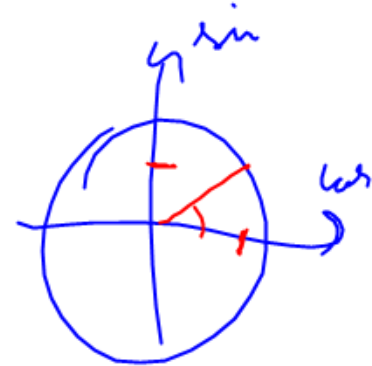
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$$(Y_A \vec{y}_1 - T_B \vec{x}_1 + N_B \vec{y}_1 + 13350 \sin \alpha \vec{x}_1 - 13350 \cos \alpha \vec{y}_1) \cdot \vec{x}_1 = 0$$

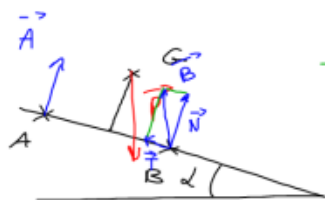
$$\vec{y}_1 \cdot \vec{x}_1 = \|\vec{y}_1\| \cdot \|\vec{x}_1\| \cdot \cos(\vec{y}_1, \vec{x}_1)$$

$$= 1 \cdot 1 \cdot 0 = 0$$

$$\vec{x}_1 \cdot \vec{x}_1 = 1 \cdot 1 \cdot 1 = 1$$



SI:



$$\vec{u} \wedge \vec{v} = \|\vec{u}\| \|\vec{v}\| \sin(\vec{u}, \vec{v}) \cdot \vec{w}$$

$$\mathcal{R}: \{0, \vec{x}_1, \vec{y}_1, \vec{z}\}$$

$$\mathcal{R}_1: \{0, \vec{x}_1, \vec{y}_1, \vec{z}\}$$

BAME:

$$\vec{A}_{0 \rightarrow 1} = \begin{pmatrix} 0 \\ Y_A \\ 0 \end{pmatrix}_{\mathcal{R}_1} = Y_A \cdot \vec{y}_1$$

$$\vec{B}_{0 \rightarrow 1} = \begin{pmatrix} -T_B \\ N_B \\ 0 \end{pmatrix}_{\mathcal{R}_1} = -T_B \vec{x}_1 + N_B \vec{y}_1$$

$$\vec{P}_{0 \rightarrow 1} = \begin{pmatrix} 0 \\ -13350 \\ 0 \end{pmatrix}_{\mathcal{R}} = -13350 \vec{y} = \begin{pmatrix} 13350 \sin d \\ -13350 \cos d \\ 0 \end{pmatrix}_{\mathcal{R}_1} = 13350 \sin d \cdot \vec{x}_1 - 13350 \cos d \cdot \vec{y}_1$$

AFS:

$$\sum \vec{F} \cdot \vec{x}_1 = 0 : -T_B + 13350 \sin d = 0 \quad (1)^{3/8}$$

$$\sum \vec{F} \cdot \vec{y}_1 = 0 : Y_A + N_B - 13350 \cos d = 0 \quad (2)$$

$$T_B = f \cdot N_B$$

$$N_B = \frac{T_B}{f} \quad (1): N_B = \frac{13350 \sin d}{f}$$

done $Y_A = 13350 \cos d - \frac{13350 \sin d}{f}$

$$Y_A = 13350 \left(\cos d - \frac{\sin d}{f} \right)$$

$$\sum \vec{M}_B \cdot \vec{z} = 0 : -Y_A \cdot 2,42 + 13350 \left(-\sin d \cdot 0,97 + \cos d \cdot 1,04 \right) = 0 \quad (3)$$

$$Y_A = 13350 \left(\cos d - \frac{\sin d}{f} \right)$$

$$\vec{M}_B \cdot \vec{z} = 0: -Y_A \cdot 2,42 + 13350 \left(-\sin d \cdot 0,97 + \cos d \cdot 1,04 \right) = 0 \quad (3)$$

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$$-13350 \left(\cos d - \frac{\sin d}{f} \right) \cdot 2,42 + 13350 \left(-\sin d \cdot 0,97 + \cos d \cdot 1,04 \right) = 0$$

$$13350 \left[- \dots \right] = 0$$

$$-2,42 \left(\cos d - \frac{\sin d}{f} \right) + \left(-\sin d \cdot 0,97 + \cos d \cdot 1,04 \right) = 0$$

$$-2,42 \cos d + 2,42 \frac{\sin d}{f} - \sin d \cdot 0,97 + \cos d \cdot 1,04 = 0$$

$$\cos d \cdot (-2,42 + 1,04) + \sin d \cdot \left(\frac{2,42}{f} - 0,97 \right) = 0$$

$$a \cdot b + a \cdot c = 0$$

$$a(b + c) = 0$$

$$b + c = \frac{0}{a}$$

$$b + c = 0$$

$$-2,42 \cos d + 2,42 \frac{\sin d}{f} - \sin d \cdot 0,97 + \cos d \cdot 1,04 = 0 \quad 5/8$$

$$\cos d \cdot (-2,42 + 1,04) + \sin d \cdot \left(\frac{2,42}{f} - 0,97 \right) = 0$$

$$\sin d \cdot \left(\frac{2,42}{f} - 0,97 \right) = \cos d \cdot (2,42 - 1,04)$$

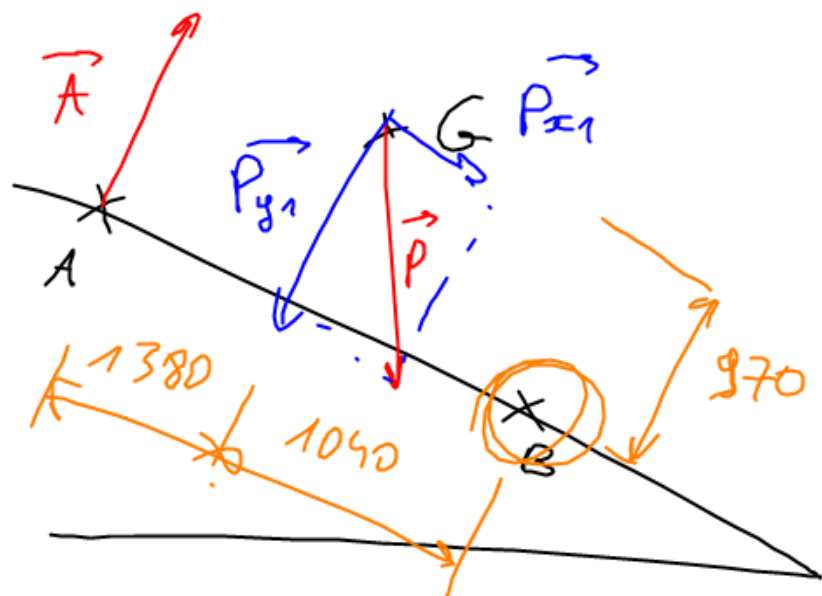
$$\tan d = \frac{\sin d}{\cos d} = \frac{2,42 - 1,04}{\left(\frac{2,42}{f} - 0,97 \right)}$$

$$d = \tan^{-1} \left(\frac{1,38}{\frac{2,42}{f} - 0,97} \right)$$

$$d = \tan^{-1} \left(\frac{1,38}{\frac{2,47}{f} - 0,97} \right)$$

$$d_g = \tan^{-1} \left(\frac{1,38}{\frac{2,47}{0,6} - 0,97} \right) \approx 24^\circ$$

à la limite au glissement



$$\vec{M}_B A = \begin{pmatrix} 0 \\ 0 \\ -Y_A \cdot 2,42 \end{pmatrix}$$

$$\vec{M}_B P = \begin{pmatrix} 0 \\ 0 \\ -13350 \sin 2 \cdot 0,97 + 13350 \cos 2 \cdot 1,04 \end{pmatrix}$$

$$\vec{M}_B \cdot \vec{z} = 0: \underbrace{-Y_A \cdot 2,42}_{=0} + 13350 \left(-\sin d \cdot 0,97 + \cos d \cdot 1,04 \right) = 0 \quad (3)$$

$$\sin d \cdot 0,97 = \cos d \cdot 1,04$$

$$\frac{\sin d}{\cos d} = \frac{1,04}{0,97}$$

$$d_b = \tan^{-1} \left(\frac{1,04}{0,97} \right) \approx 47^\circ$$

à la limite au basculement

$\alpha_g < \alpha_b$ donc il y a glissement avant basculement