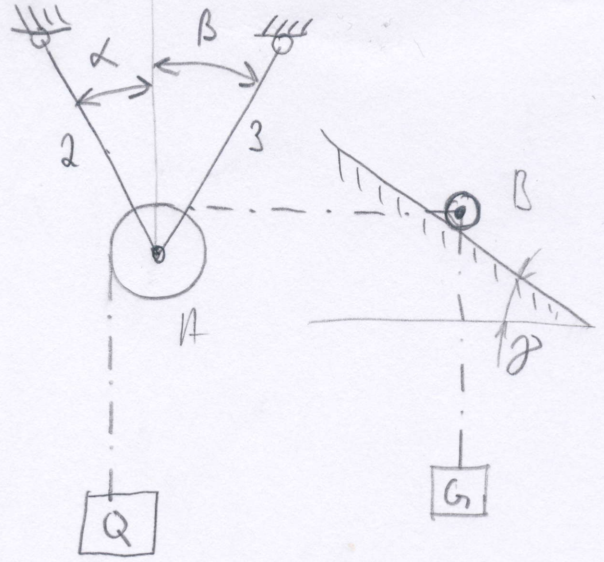
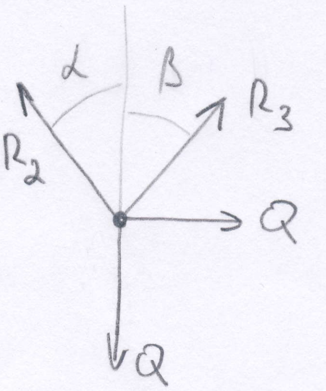
PŘÍKLAD HB_02

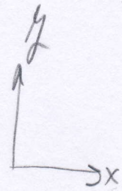


D: α, β, γ
a) Q
b) G

U: a) G + REAKCE
b) Q + REAKCE

A

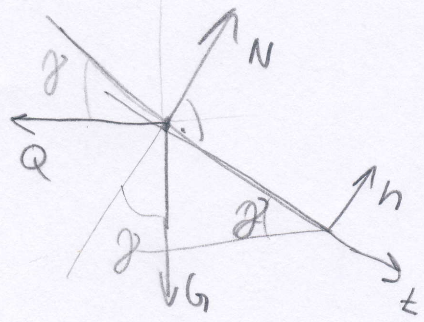




$$x: \; Q + \underline{R_3} \sin\beta - \underline{R_2} \sin\alpha = 0 \qquad 1)$$

$$y: \; R_3 \cos\beta + R_2 \cos\alpha - Q = 0 \qquad 2)$$

B



$$t: \; \underline{G} \sin\gamma - Q \cos\gamma = 0 \qquad 3)$$

$$n: \; \underline{N} - G \cos\gamma - Q \sin\gamma = 0 \qquad 4)$$

4 NEZNÁMÉ: $G(Q), N, R_2, R_3$
4 ROVNICE

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a)

$$G = Q \cotg\gamma$$

$$N = G \cos\gamma + Q \sin\gamma = Q\left(\cotg\gamma \cdot \cos\gamma + \sin\gamma\right) =$$

$$= Q\left(\frac{\cos^2\gamma}{\sin\gamma} + \sin\gamma\right) = Q\left(\frac{\cos^2\gamma + \sin^2\gamma}{\sin\gamma}\right) = \underline{\frac{Q}{\sin\gamma}}$$

$\Rightarrow$ PRO $\gamma = 0$ NEMÁ ŘEŠENÍ
PRO $\gamma = \frac{\pi}{2}$ $\quad G = 0 \; ; \; N = Q$

R_2 A R_3 URČÍME Z ROVNIC 1), 2)

MATICOVÝ ZÁPIS, HB_02

$$\begin{bmatrix} -\sin\alpha & \sin\beta & 0 & 0 \\ \cos\alpha & \cos\beta & 0 & 0 \\ 0 & 0 & 0 & \sin\gamma \\ 0 & 0 & 1 & -\cos\gamma \end{bmatrix} \times \begin{bmatrix} R_2 \\ R_3 \\ N \\ G \end{bmatrix} = Q \begin{bmatrix} -1 \\ 1 \\ \cos\gamma \\ \sin\gamma \end{bmatrix}$$

$$\Rightarrow R_2, R_3, N, G$$

b)

$$\begin{array}{cccc} R_2 & R_3 & N & Q \end{array}$$

$$\begin{bmatrix} -\sin\alpha & \sin\beta & 0 & 1 \\ \cos\alpha & \cos\beta & 0 & -1 \\ 0 & 0 & 0 & -\cos\gamma \\ 0 & 0 & 1 & -\sin\gamma \end{bmatrix} \times \begin{bmatrix} R_2 \\ R_3 \\ N \\ Q \end{bmatrix} = G \begin{bmatrix} 0 \\ 0 \\ -\sin\gamma \\ \cos\gamma \end{bmatrix}$$