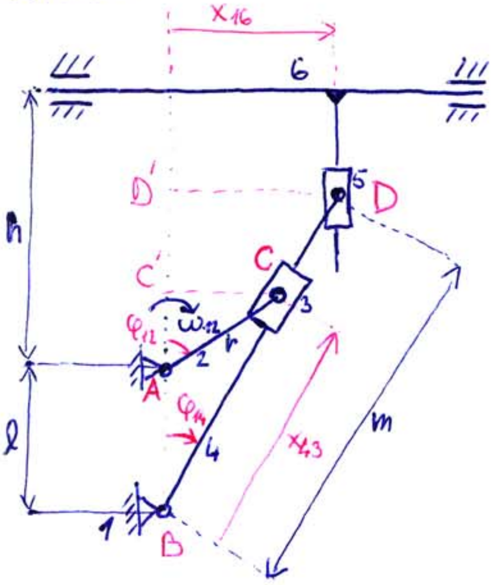
hoblovka



D: $\omega_{12} = \text{konst.}$

h, l, r, m

U: Trigonometrickou metodou absolutní pohyby vahadla 4 a stolu 6 a relativní pohyb objímky 3 vzhledem k vahadlu 4

$$\varphi_{12} = \omega_{12} \cdot t$$

$$tg\,\varphi_{14} = \frac{\overline{CC'}}{\overline{BC'}} = \frac{r \cdot \sin\varphi_{12}}{l + r \cdot \cos\varphi_{12}}$$

derivace podle času:

$$\frac{1}{\cos^2\varphi_{14}}\dot{\varphi}_{14} = \frac{(l + r\cdot\cos\varphi_{12})\, r\cos\varphi_{12} + r\cdot\sin\varphi_{12}\cdot r\cdot\sin\varphi_{12}}{(l + r\cdot\cos\varphi_{12})^2}\cdot\dot{\varphi}_{12}$$

$$\cos^2\varphi_{14} = \frac{1}{1 + tg^2\varphi_{14}} = \frac{(l + r\cdot\cos\varphi_{12})^2}{(l + r\cdot\cos\varphi_{12})^2 + r^2\cdot\sin^2\varphi_{12}}$$

$$\dot{\varphi}_{14} = \frac{l\cdot r\cdot\cos\varphi_{12} + r^2\cdot\cos^2\varphi_{12} + r^2\sin^2\varphi_{12}}{l^2 + 2\cdot r\cdot l\cdot\cos\varphi_{12} + r^2\cdot\cos^2\varphi_{12} + r^2\cdot\sin^2\varphi_{12}}\,\dot{\varphi}_{12} = \omega_{14} = \frac{r^2 + l\cdot r\cdot\cos\varphi_{12}}{l^2 + r^2 + 2\cdot r\cdot l\cdot\cos\varphi_{12}}\,\dot{\varphi}_{12}$$

$$(\dot{\varphi}_{12} = \omega_{12} = \text{konst.})$$

$$\ddot{\varphi}_{14} = \dot{\omega}_{14} = \alpha_{14} = \frac{l\cdot r\,(r^2 - l^2)\,\sin\varphi_{12}}{(l^2 + r^2 + 2\cdot l\cdot r\cdot\cos\varphi_{12})^2}\,\dot{\varphi}_{12}^2 \qquad (\ddot{\varphi}_{12} = \dot{\omega}_{12} = \emptyset)$$

$$x_{16} = m\cdot\sin\varphi_{14} = m\frac{r\cdot\sin\varphi_{12}}{\sqrt{l^2 + r^2 + 2\cdot r\cdot l\cdot\cos\varphi_{12}}}$$

$$x_{43} = \sqrt{l^2 + r^2 - 2\cdot r\cdot l\cdot\cos(\pi - \varphi_{12})} = \sqrt{l^2 + r^2 + 2\cdot r\cdot l\cdot\cos\varphi_{12}}$$

$$\cos(\pi - \varphi_{12}) = \cos\pi\cos\varphi_{12} + \sin\pi\sin\varphi_{12} = -\cos\varphi_{12}$$