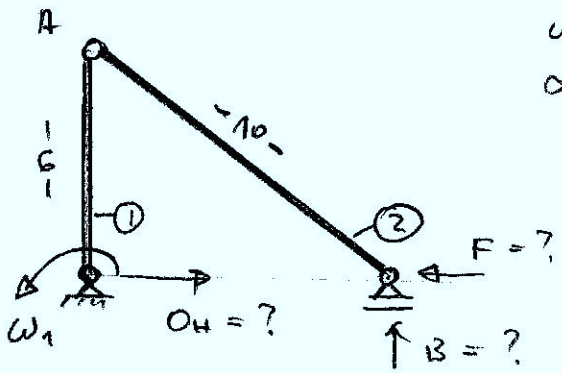
Вар. 2 - Модул 2

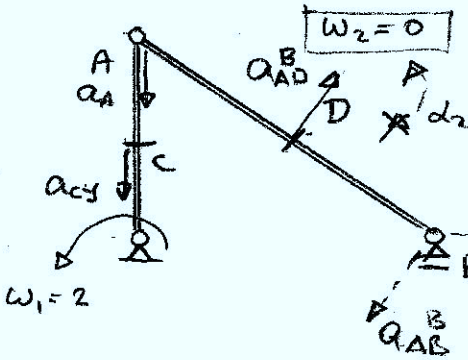


$\omega_1 = 2\,s^{-1}$ $\quad m_1 = 50$ kg

$\alpha_1 = 0$ $\quad m_2 = 10$ kg/m' $\rightarrow$

$m_2 = 10 \cdot 10 = 100$ kg

1. Кинемат. решение $a_A^B = 0$ $\quad a_A^u = \omega_1^2 \cdot 6 = 2^2 \cdot 6 = 24 \ \frac{m}{s^2}(\downarrow)$



$a_C^B = 0 = a_{CX}$ $\quad a_C^u = \omega_1^2 \cdot 3 = 2^2 \cdot 3 = 12 \ \frac{m}{s^2}(\downarrow) = a_{CY}$

$\vec{a}_B = \vec{a}_A + \vec{a}_{AB}^B + \vec{a}_{AB}^u$ $\quad (a_{AB}^u = 0)$

$a_B \rightarrow$ $\quad a_A = 24 \downarrow$ $\quad a_{AB}^B = \alpha_2 \cdot 10$

x: $a_B = -\alpha_2 \cdot 10 \cdot 0{,}6$

y: $0 = -24 - \alpha_2 \cdot 10 \cdot 0{,}8 \rightarrow \alpha_2 = -3$ (↺)

$\vec{a}_D = \vec{a}_A + \vec{a}_{AD}^B + \vec{a}_{AD}^u$ $\quad (a_{AD}^u = 0)$

$a_A = 24 \downarrow$ $\quad a_{AD}^B = 3 \cdot 5 = 15$

$a_{DX} = 15 \cdot 0{,}6 = 9 \ m/s^2 \ (\rightarrow)$

$a_{DY} = -24 + 15 \cdot 0{,}8 = -12 \ m/s^2 \ (\downarrow)$

2. Инерционни сили

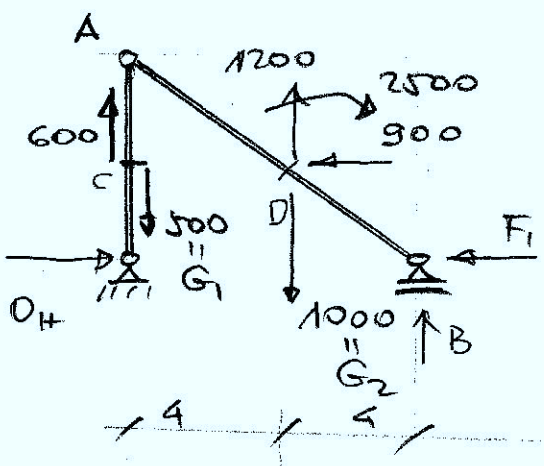
тяло ① $\quad \Phi_{1X} = 0$ $\quad \Phi_{1Y} = m_1 a_{CY} = 50 \cdot 12 = 600$ N (↑)

тяло ② $\quad \Phi_{2X} = m_2 \cdot a_{DX} = 100 \cdot 9 = 900$ N (←)

$\Phi_{2Y} = m_2 a_{DY} = 100 \cdot 12 = 1200$ N (↑)

$M_2^{\Phi} = J_2 \alpha_2 = \frac{1}{12} \cdot 100 \cdot 10^2 \cdot 3 = 2500$ N.m (↺)

3. Условия за динамично равновесие.



$\Sigma M_A^{(1)} = 0$ $\quad O_H \cdot 6 = 0 \rightarrow O_H = 0$

$\Sigma H^{(1,2)} = 0$

$-F_1 - 900 + 0 = 0$ $\quad F_1 = -900$ N (→)

$\Sigma M_A^{(2)} = 0$

$B \cdot 8 + 900 \cdot 6 + 200 \cdot 4 - 900 \cdot 3 - 2500 = 0$

$B = -125$ N (↓)