GS 2. — dekanski rok, ožujak 2026.

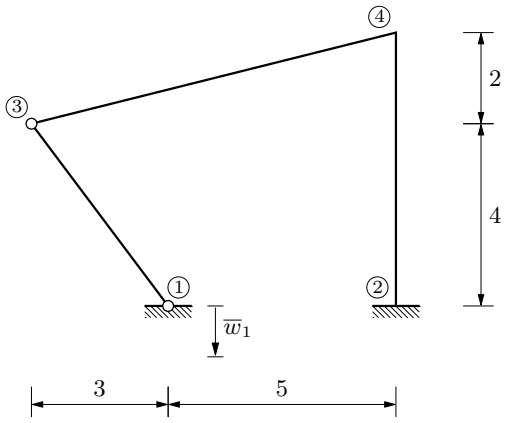
Zadatak 1.

Ispitni zadatak:

Inženjerskom metodom pomakā nacrtajte dijagrame unutarnjih sila!

$\overline{w}_1 \;=\; 1{,}25\,\text{cm}$

$EI \;=\; 162\,000\,\text{kNm}^2$



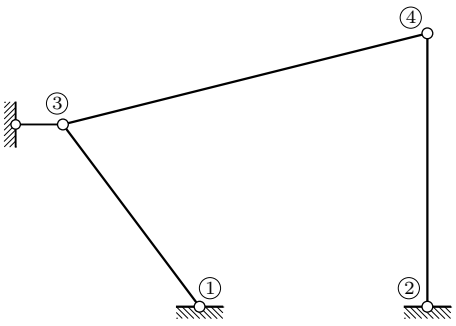
Ovdje samo:

Izrazite kutove $\psi_{\{1,3\}}$, $\psi_{\{2,4\}}$ i $\psi_{\{3,4\}}$ u ovisnosti o duljini neovisnoga translacijskog pomaka!

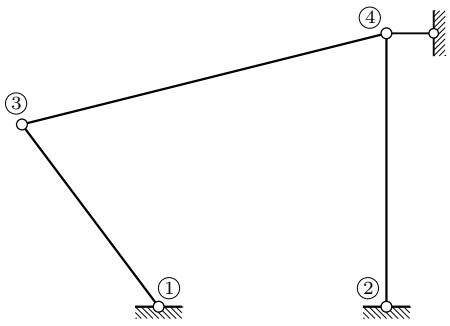
Something familiar, something peculiar,
something for everyone, it's comedy tonight!
Something appealing, something appaling,
something for everyone, it's comedy tonight!
Nothing with kings, nothing with crowns.
Bring on the lovers, liars and clowns!
Old situations, new complications, nothing portentuous or polite.
Tragedy tomorrow, comedy tonight!

Steven Sondheim: *Comedy Tonight*

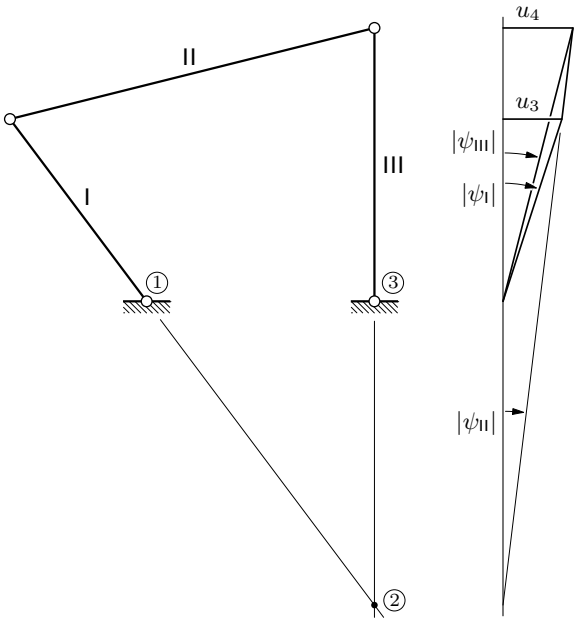
(koliko ću još puta morati crtati dijagrame projekcija pomakā (i planove pomakā)???)

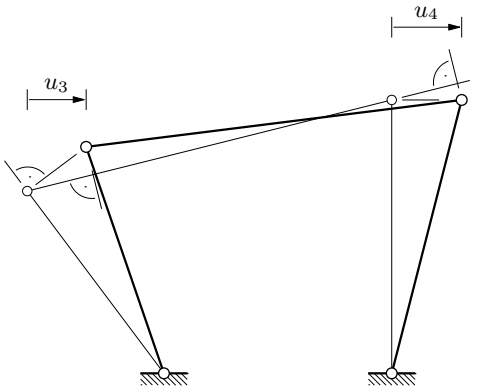


neovisni translacijski pomak: u_3



neovisni translacijski pomak: u_4





(plan pomakā reda radi...
a, dakako, i zora radi)

$$\frac{\ell_{2,3}}{5} = \frac{4}{3} \qquad \Rightarrow \qquad \ell_{2,3} = \frac{20}{3}$$

neovisni pomak u_4:

$$\psi_{\{2,4\}} = \psi_{III} = -\frac{u_4}{6} = -0{,}167\, u_4$$

$$\psi_{\{3,4\}} = \psi_{II} = -\frac{u_4}{\frac{20}{3}+6} = -\frac{3}{38}\, u_4 = -0{,}078\,9\, u_4$$

$$\frac{u_3}{u_4} = \frac{\frac{20}{3}+4}{\frac{20}{3}+6} \quad \Rightarrow \quad u_3 = \frac{16}{19}\, u_4$$

$$\psi_{\{1,3\}} = \psi_I = -\frac{u_3}{4} = -\frac{4}{19}\, u_4 = -0{,}211\, u_4$$

neovisni pomak u_3:

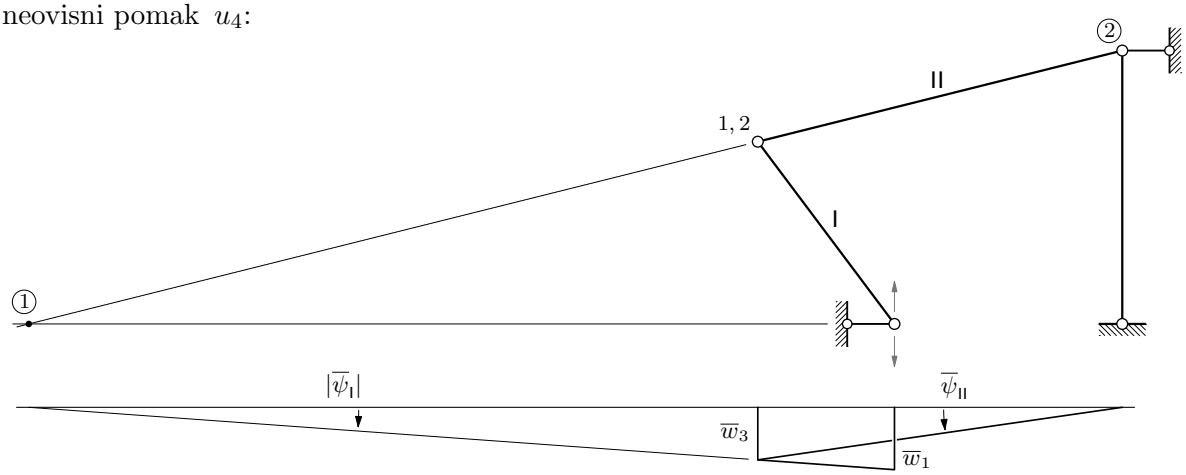
$$\psi_{\{1,3\}} = \psi_I = -\frac{u_3}{4} = -0{,}25\, u_3$$

$$\psi_{\{3,4\}} = \psi_{II} = -\frac{u_3}{\frac{20}{3}+4} = -\frac{3}{32}\, u_3 = -0{,}093\,8\, u_3$$

$$\frac{u_4}{u_3} = \frac{\frac{20}{3}+6}{\frac{20}{3}+4} \quad \Rightarrow \quad u_4 = \frac{19}{16}\, u_3$$

$$\psi_{\{2,4\}} = \psi_{III} = -\frac{u_4}{6} = -\frac{19}{96}\, u_3 = -0{,}198\, u_3$$

za neovisni pomak u_4:



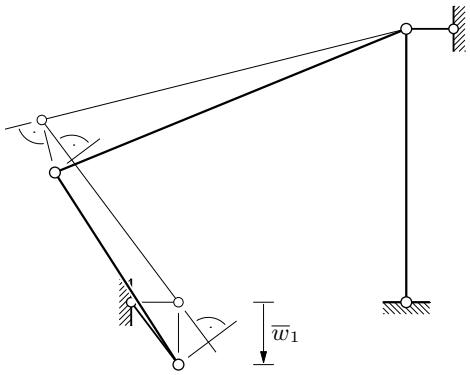
$$\frac{\ell_1}{4} = \frac{8}{2} \qquad \Rightarrow \qquad \ell_1 = 16$$

$$\overline{\psi}_{\{1,3\}} = \overline{\psi}_{\mathrm{I}} = -\frac{\overline{w}_1}{16+3} = -\frac{\overline{w}_1}{19} = -0{,}000\,658$$

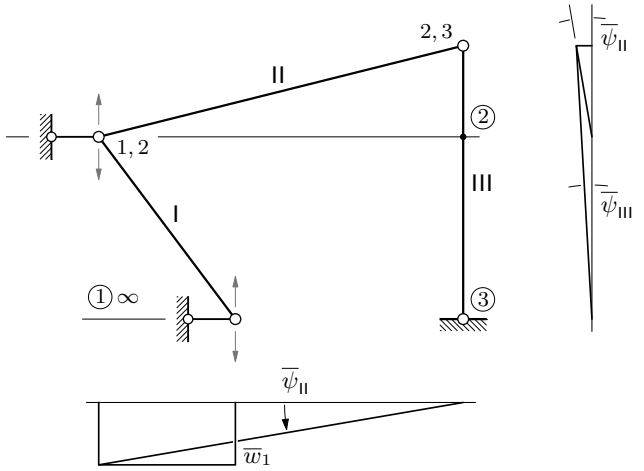
$$\frac{\overline{w}_3}{\overline{w}_1} = \frac{16}{19} \qquad \Rightarrow \qquad \overline{w}_3 = \frac{16}{19}\,\overline{w}_1$$

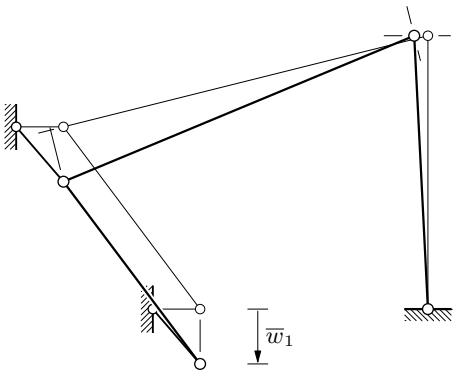
$$\overline{\psi}_{\{3,4\}} = \overline{\psi}_{\mathrm{II}} = \frac{\overline{w}_3}{8} = \frac{2}{19}\,\overline{w}_1 = 0{,}001\,32$$

$$\overline{\psi}_{\{2,4\}} = 0$$



za neovisni pomak u_3:





(duljina $\overline{w}_1$ na ovom planu pomaka nije jednaka duljinama na ostalim crtežima)

$$\overline{\psi}_{\{1,3\}} = \overline{\psi}_{\mathrm{I}} = 0$$

$$\overline{\psi}_{\{3,4\}} = \overline{\psi}_{\mathrm{II}} = \frac{\overline{w}_1}{8} = 0{,}001\,56$$

$$\overline{\psi}_{\mathrm{II}} \cdot 2 = \overline{\psi}_{\mathrm{III}} \cdot 6 \qquad \Rightarrow \qquad \overline{\psi}_{\mathrm{III}} = \frac{\overline{\psi}_{\mathrm{II}}}{3}$$

$$\overline{\psi}_{\{2,4\}} = \overline{\psi}_{\mathrm{III}} = 0{,}000\,52$$