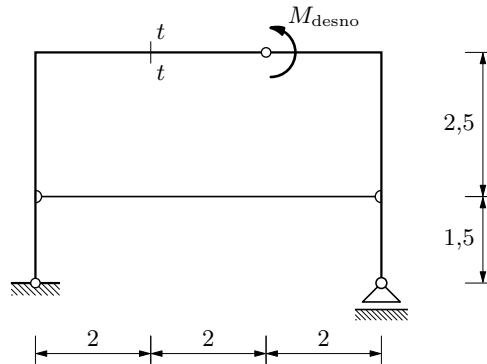


GS 2. — 7. ožujka 2024.

Zadatak 2.

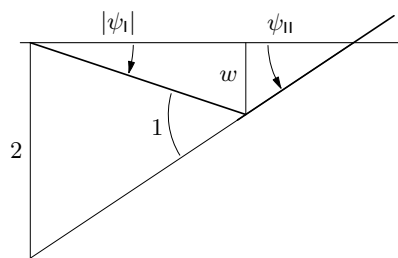
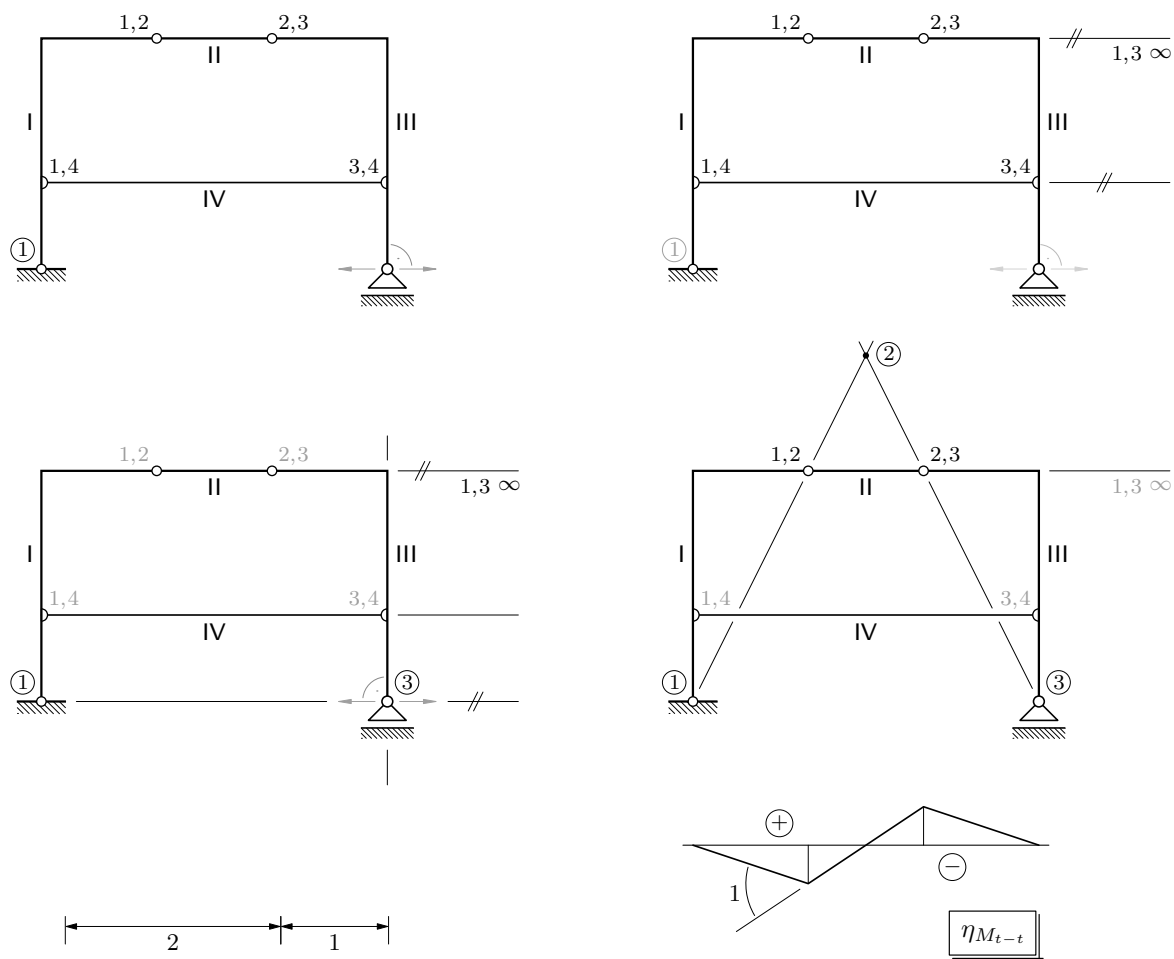
Pomoću utjecajnih linija izračunajte vrijednosti unutarnjih sila u presjeku $t-t$!

$$M_{\text{desno}} = 75 \text{ kNm}$$



odgovor — (nešto kao) strip (s prikazima korakā nalaženja polova) — počinje na sljedećoj stranici

utjecajna linija za moment savijanja u presjeku $t-t$:



$$\psi_{II} = \frac{2}{3}$$

$$w = \psi_{II} \cdot 1$$

$$\psi_I = -\frac{w}{2} = -\frac{\psi_{II}}{2} = -\frac{1}{3}$$

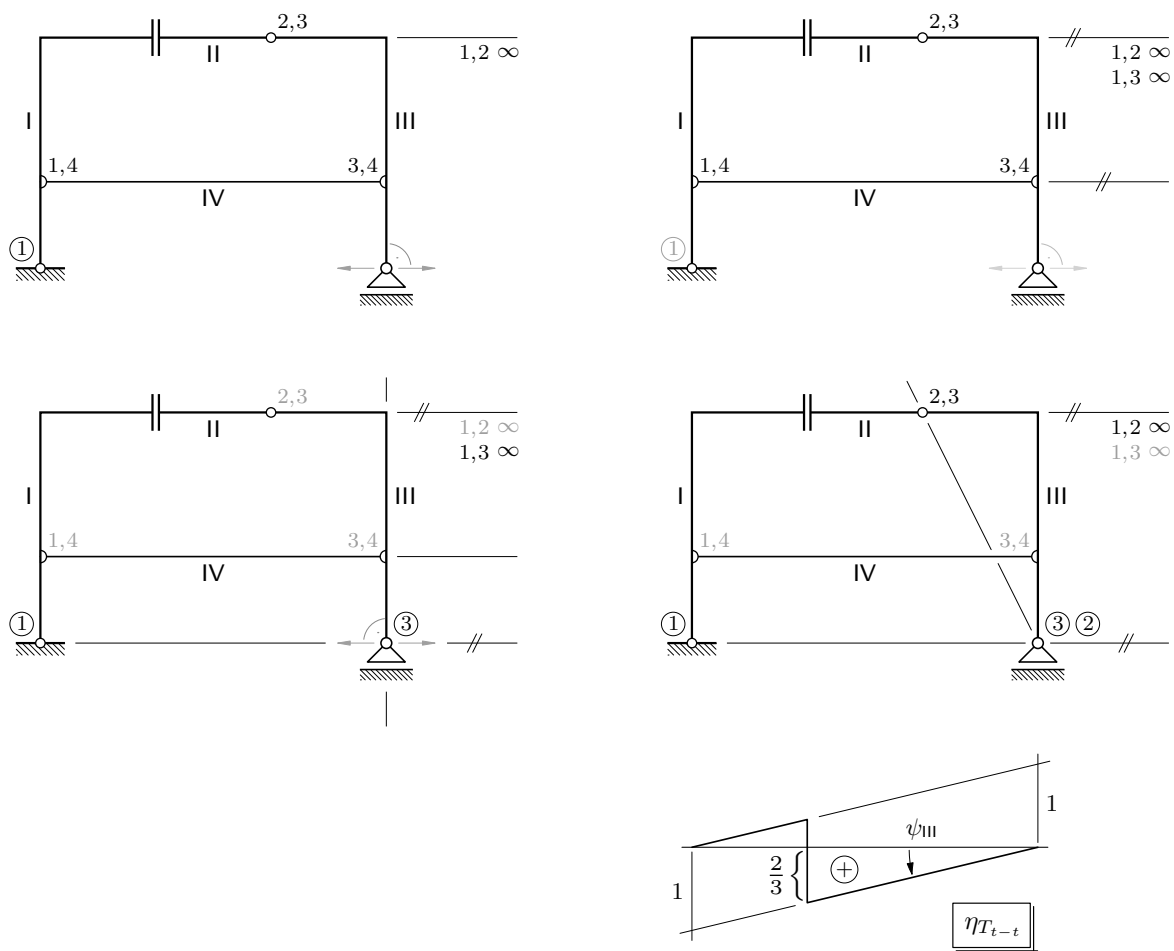
$$\psi_{III} = \psi_I \quad (\text{pol 1, 3 u } \infty)$$

vrijednost momenta savijanja u presjeku $t-t$:

$$\alpha_M = -\psi_{III} = \frac{1}{3}$$

$$M_{t-t} = -\alpha_M \cdot M_{\text{desno}} = -\frac{1}{3} \cdot 75 = -25 \text{ kNm}$$

utjecajna linija za poprečnu silu u presjeku $t-t$:



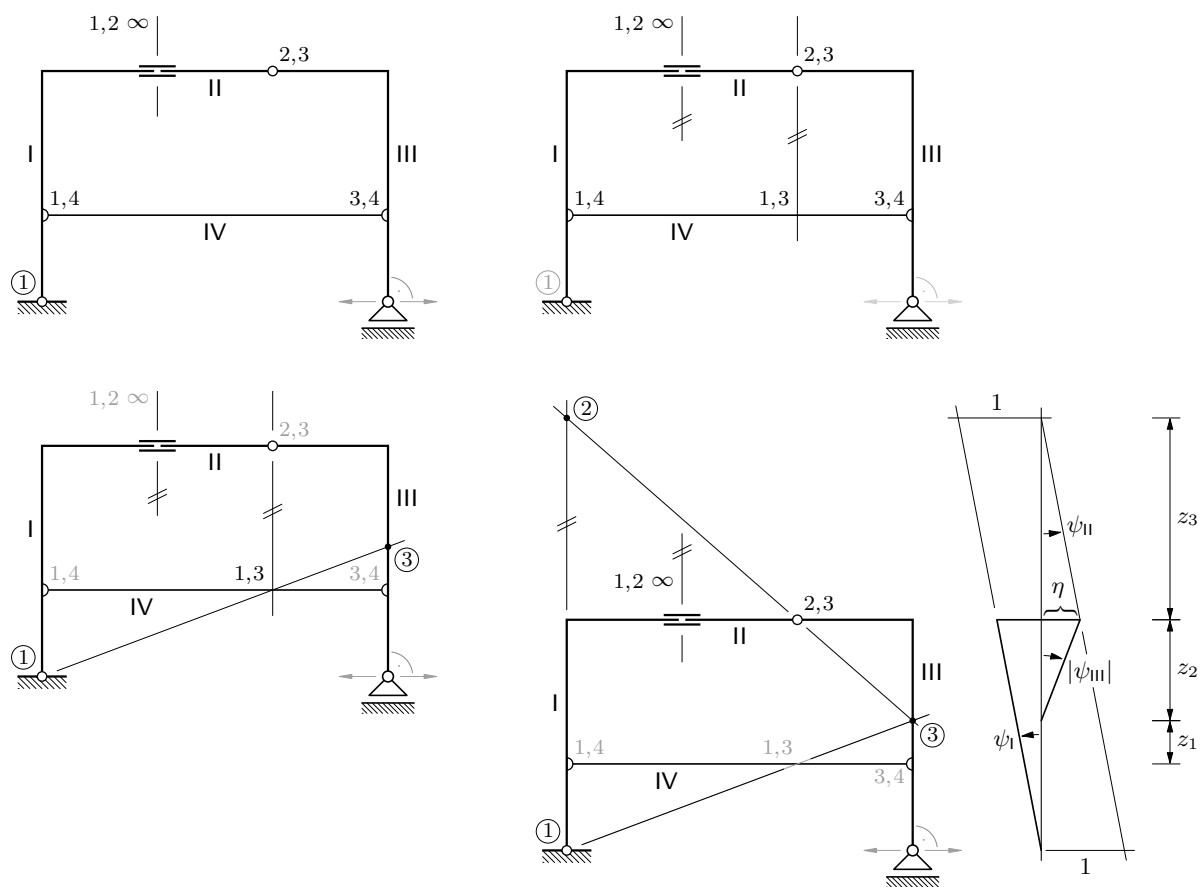
vrijednost poprečne sile u presjeku $t-t$:

$$\psi_{II} = \psi_{III} = \frac{\frac{2}{3}}{4} = \frac{1}{6}$$

$$\alpha_M = -\psi_{III} = -\frac{1}{6}$$

$$T_{t-t} = -\alpha_M \cdot M_{desno} = -\left(-\frac{1}{6}\right) \cdot 75 = 12,5 \text{ kN}$$

utjecajna linija za uzdužnu silu u presjeku $t-t$:



vrijednost uzdužne sile u presjeku $t-t$:

$$\frac{z_1}{2} = \frac{1,5}{4} \Rightarrow z_1 = 0,75 \quad \& \quad z_2 = 2,5 - z_1 = 1,75$$

$$\frac{z_3}{4} = \frac{z_2}{2} \Rightarrow z_3 = 3,5$$

$$\psi_{II} = \frac{1}{4 + z_2} = \frac{1}{4 + 3,5} = \frac{2}{15} \quad \& \quad \eta = \psi_{II} \cdot z_2 = \frac{2}{15} \cdot 3,5 = \frac{7}{15}$$

$$\psi_{III} = -\frac{\eta}{z_2} = -\frac{\frac{7}{15}}{1,75} = -\frac{4 \cdot \frac{7}{15}}{4 \cdot 1,75} = -\frac{4 \cdot \frac{7}{15}}{7} = -\frac{4}{15}$$

$$\alpha_M = -\psi_{III} = \frac{4}{15}$$

$$N_{t-t} = -\alpha_M \cdot M_{desno} = -\frac{4}{15} \cdot 75 = -20 \text{ kN}$$