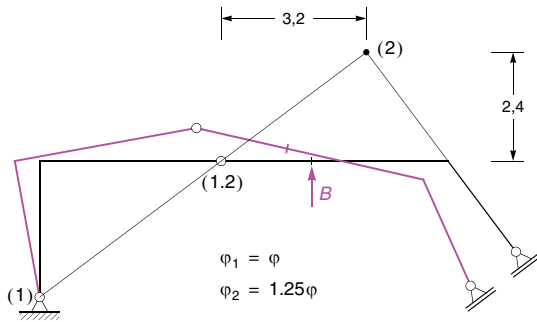
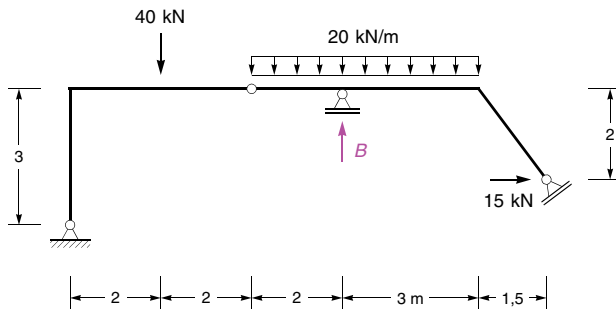
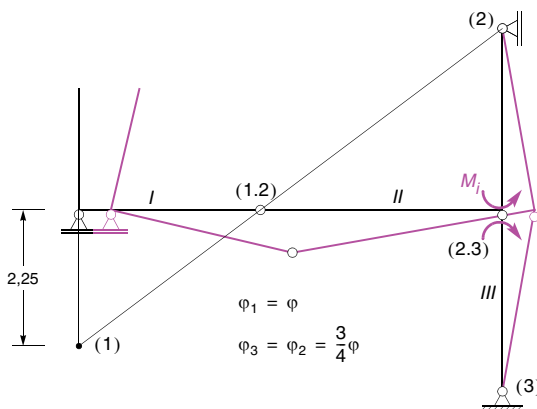
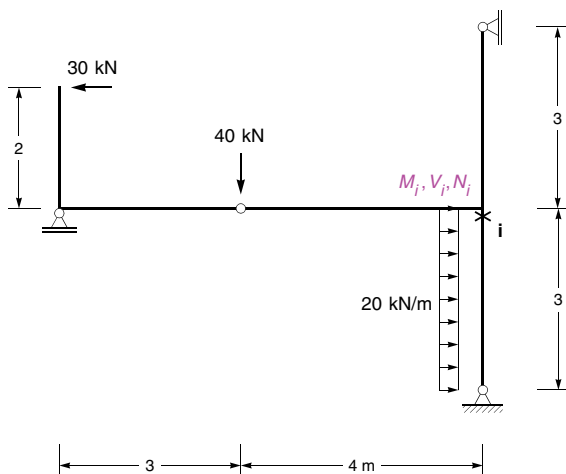


Aufgabe 1

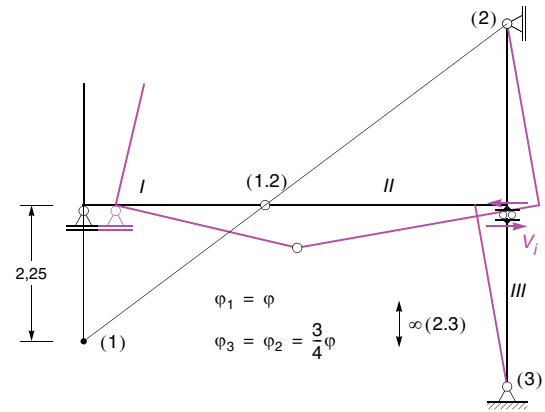
$$\sum \bar{W} = 0: B \cdot 1.25\varphi \cdot 1.2 - 40 \cdot \varphi \cdot 2 - 20 \cdot 5 \cdot 1.25\varphi \cdot 0.7 - 15 \cdot 1.25\varphi \cdot 4.4 = 0$$

$$\Rightarrow B = 166.66667$$

Aufgabe 2

$$\sum \bar{W} = 0: M_i \cdot \frac{3}{4}\varphi + M_i \cdot \frac{3}{4}\varphi + 20 \cdot 3 \cdot \frac{3}{4}\varphi \cdot 1.5 + 40 \cdot \varphi \cdot 3 - 30 \cdot \varphi \cdot 4.25 = 0$$

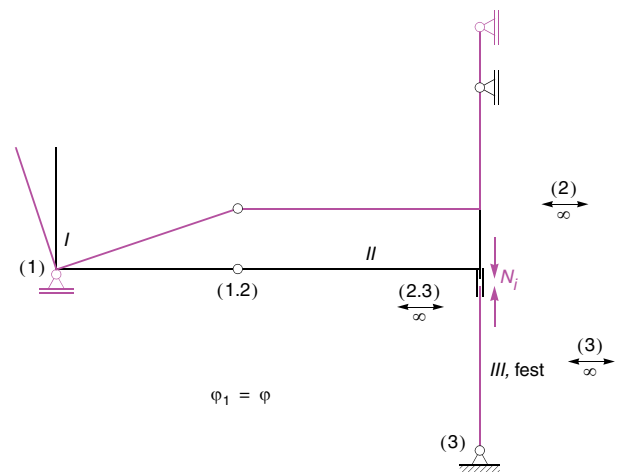
$$\Rightarrow M_i = -40$$



$$\sum \bar{W} = 0:$$

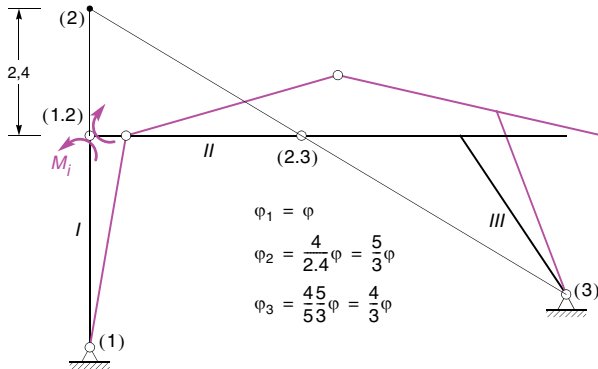
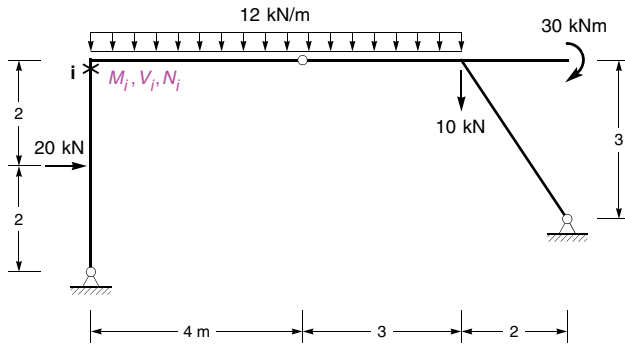
$$-V_i \cdot \frac{3}{4}\varphi \cdot 3 - V_i \cdot \frac{3}{4}\varphi \cdot 3 - 20 \cdot 3 \cdot \frac{3}{4}\varphi \cdot 1.5 + 40 \cdot \varphi \cdot 3 - 30 \cdot \varphi \cdot 4.25 = 0$$

$$\Rightarrow V_i = -16.666667$$

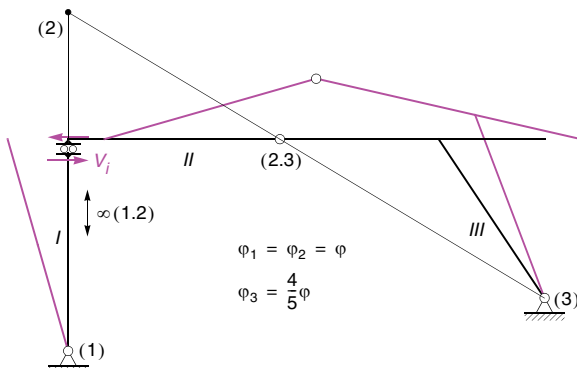


$$\sum \bar{W} = 0: -N_i \cdot \varphi \cdot 3 - 40 \cdot \varphi \cdot 3 + 30 \cdot \varphi \cdot 2 = 0 \Rightarrow N_i = -20$$

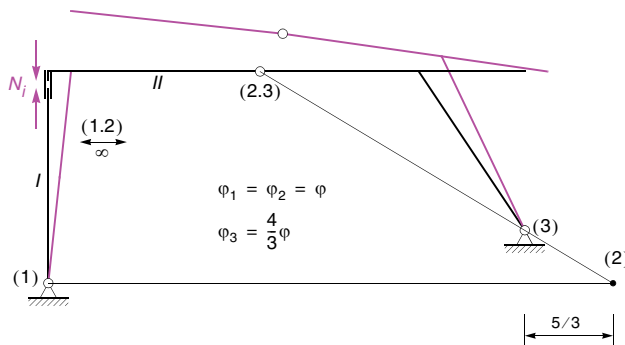
Aufgabe 3



$$\begin{aligned}\sum \bar{W} = 0: & -M_i \cdot \varphi - M_i \cdot \frac{5}{3}\varphi + 20 \cdot \varphi \cdot 2 - 12 \cdot 4 \cdot \frac{5}{3}\varphi \cdot 2 \\ & - 12 \cdot 3 \cdot \frac{4}{3}\varphi \cdot 3.5 - 10 \cdot \frac{4}{3}\varphi \cdot 2 + 30 \cdot \frac{4}{3}\varphi = 0 \Rightarrow M_i = -103\end{aligned}$$

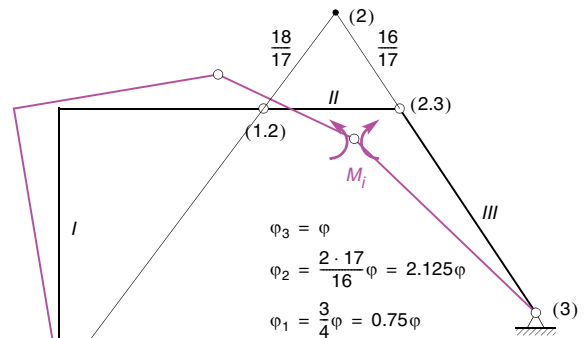
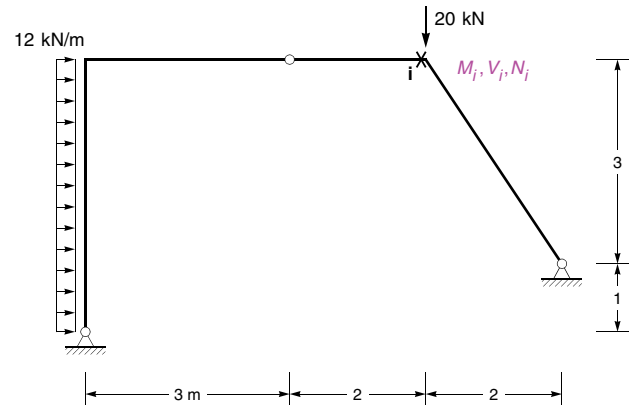


$$\begin{aligned}\sum \bar{W} = 0: & -V_i \cdot \varphi \cdot 4 - V_i \cdot \varphi \cdot 2.4 - 20 \cdot \varphi \cdot 2 - 12 \cdot 4 \cdot \varphi \cdot 2 - 12 \cdot 3 \cdot \frac{4}{5}\varphi \cdot 3.5 \\ & - 10 \cdot \frac{4}{5}\varphi \cdot 2 + 30 \cdot \frac{4}{5}\varphi = 0 \Rightarrow V_i = -35.75\end{aligned}$$

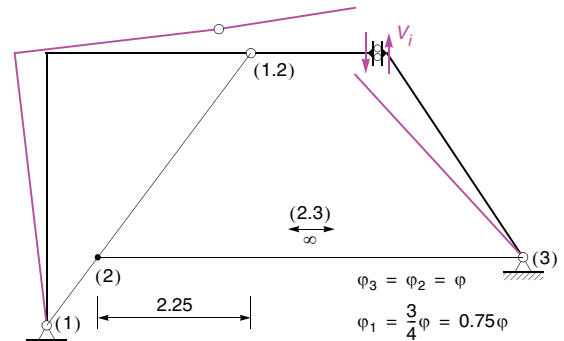


$$\begin{aligned}\sum \bar{W} = 0: & -N_i \cdot \varphi \cdot \frac{32}{3} + 20 \cdot \varphi \cdot 2 - 12 \cdot 4 \cdot \varphi \cdot \frac{26}{3} - 12 \cdot 3 \cdot \frac{4}{3}\varphi \cdot 3.5 \\ & - 10 \cdot \frac{4}{3}\varphi \cdot 2 + 30 \cdot \frac{4}{3}\varphi = 0 \Rightarrow N_i = -49.75\end{aligned}$$

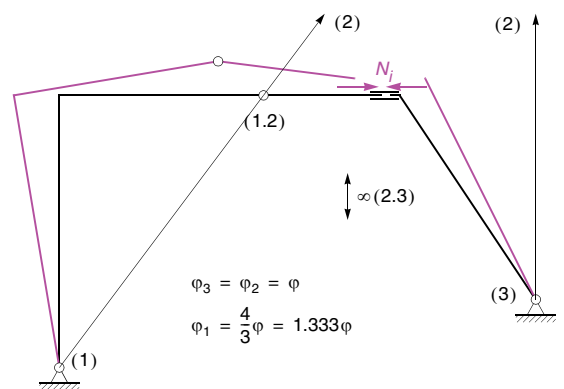
Aufgabe 4



$$\begin{aligned}\sum \bar{W} = 0: & -M_i \cdot 2.125\varphi - M_i \cdot \varphi + 20 \cdot \varphi \cdot 2 - 12 \cdot 4 \cdot 0.75\varphi \cdot 2 = 0 \\ \Rightarrow M_i &= -10.24\end{aligned}$$



$$\begin{aligned}\sum \bar{W} = 0: & -V_i \cdot \varphi \cdot 4.25 - V_i \cdot \varphi \cdot 2 + 20 \cdot \varphi \cdot 2 - 12 \cdot 4 \cdot 0.75\varphi \cdot 2 = 0 \\ \Rightarrow V_i &= -5.12\end{aligned}$$



$$\begin{aligned}\sum \bar{W} = 0: & -N_i \cdot 1.333\varphi \cdot 4 - N_i \cdot \varphi \cdot 3 - 20 \cdot \varphi \cdot 2 - 12 \cdot 4 \cdot 1.333\varphi \cdot 2 = 0 \\ \Rightarrow N_i &= -20.16\end{aligned}$$