

Schnitt rechts von A:

ragt \vec{x} aus dem St. heraus
 \rightarrow pos. Schnittufer

gesucht: Schnittkräfte N, V, M

1. Auflagerkräfte:

$$\sum \vec{F}_x \rightarrow A_x = 0$$

$$\sum \vec{M}_A = 0 = -10 \cdot 1,0 + B \cdot 5,0$$

$$\rightarrow B = \frac{10}{5,0} = 2,0 \text{ kN}$$

$$\sum \vec{F}_z = 0 = 10 - 2,0 - A_z$$

$$\rightarrow A_z = 8,0 \text{ kN}$$

~ 0 pos. Schnittufer

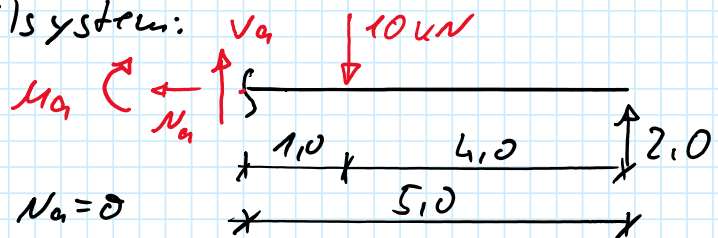
$$\sum \vec{F}_x = 0 = N_A$$

$$\sum \vec{F}_z = 0 = -8,0 + V_A$$

$$\rightarrow V_A = +8,0 \text{ kN}$$

$$\sum \vec{M} = 0 = -8,0 \cdot 0 + M_A \rightarrow M_A = 0$$

Alternativ: rechtes Teilsystem:



$$\sum \vec{F}_x = 0 \rightarrow N_A = 0$$

$$\sum \vec{F}_z = 0 = -V_A + 10 - 2,0 \rightarrow V_A = +8,0 \text{ (s.o.)}$$

$$\sum \vec{M} = 0 = -M_A - 10 \cdot 1,0 + 2,0 \cdot 5,0 \rightarrow M_A = -10 + 10 = 0 \text{ (s.o.)}$$

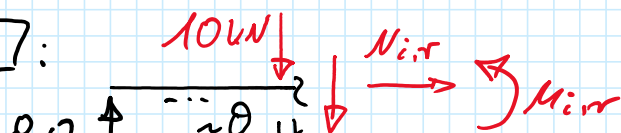
Schnitt links von [i]:

$$\sum \vec{F}_x \rightarrow N_{i,l} = 0$$

$$\sum \vec{F}_z = 0 = -8,0 + V_{i,l} \rightarrow V_{i,l} = +8,0$$

$$\sum \vec{M} = 0 = -8,0 \text{ kN} \cdot 1,0 \text{ m} + M_{i,l} \rightarrow M_{i,l} = 8,0 \text{ kNm}$$

Schnitt rechts von [i]:



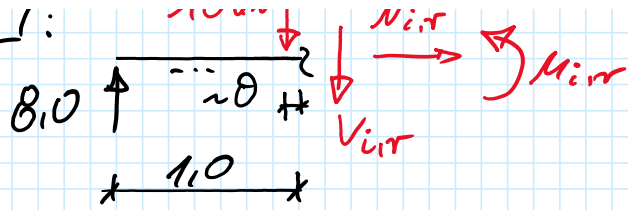
Schnitt rechts von c:

$$\sum F_x \rightarrow N_{i,r} = 0$$

$$\sum F_z = 0 = -8,0 + 10,0 + V_{i,r}$$

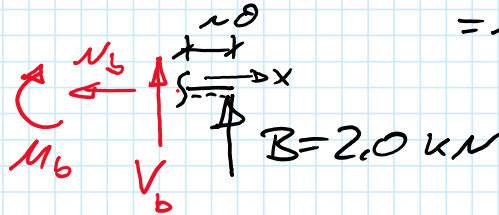
$$\rightarrow V_{i,r} = -2,0 \text{ kN}$$

$$\sum \bar{M} = 0 = -8,0 \text{ kN} \cdot 1,0 \text{ m} + 10 \text{ kN} \cdot 0 \text{ m} + M_{i,r} \rightarrow M_{i,r} = 8,0 \text{ kNm} = M_{i,l}$$



Schnitt links von b:

rechtes Teilsystem;
x-Achse zeigt in das
Schnittufer hinein
 \rightarrow negatives SN



$$\sum F_x \rightarrow N_b = 0$$

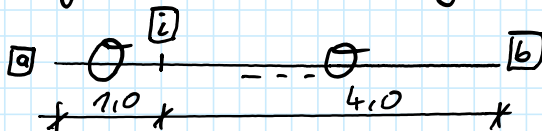
$$\sum F_z = 0 = -V_b - 2,0 \text{ kN}$$

$$\rightarrow V_b = -2,0 \text{ kN}$$

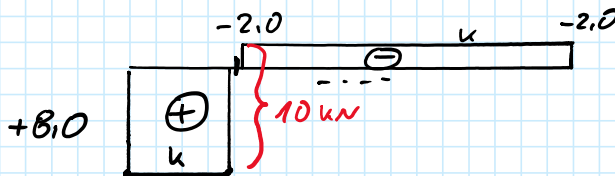
$$\sum \bar{M} = 0 = -M_b + B \cdot 0 \rightarrow M_b = 0$$

Darstellung der Schnittgrößen:

(N)
[kN]

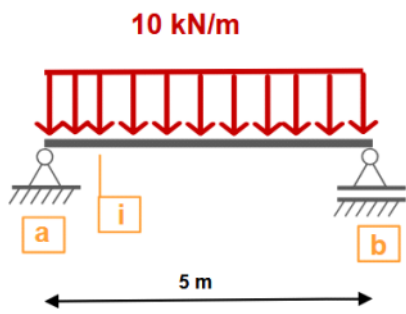


(V)
[kN]



(M)
[kNm]





Beispiel 7.1

