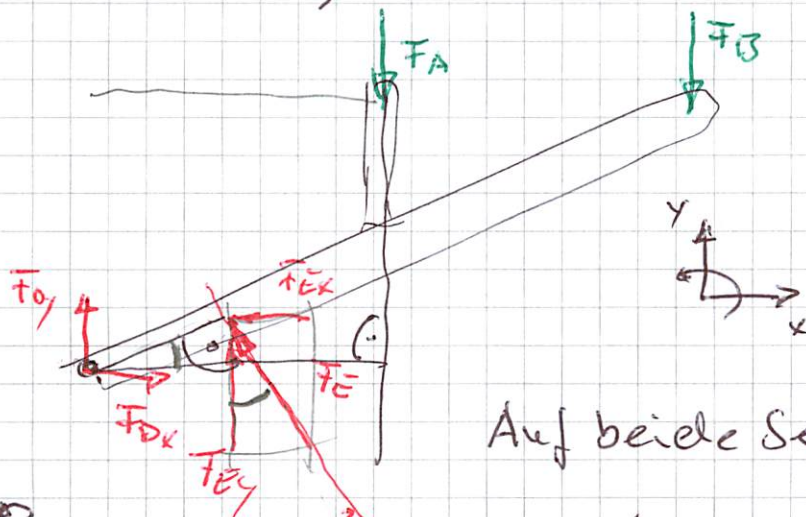


4.2

LS Hebel + Zyl. 2



Auf beide Seiten bezogen!

$$\sum \overset{D}{M}_D = 0 = +F_E \cdot l_4 - F_A \cdot (l - l_1 - l_2) - F_B \cdot (l + l_3)$$

$$F_E = \frac{F_A \cdot (l - l_1 - l_2) + F_B \cdot l}{l_4}$$

$$= \frac{20 \text{ kN} \cdot (5 \text{ m} - 0,5 \text{ m} - 2 \text{ m}) + 20 \text{ kN} \cdot 5 \text{ m}}{1,25 \text{ m}}$$

$$= 120 \text{ kN} \quad \&$$

$$\uparrow \sum \bar{F}_y = 0 = +\bar{F}_{Dy} + \bar{F}_{Ey} - F_A - F_B$$

$$\begin{aligned} F_{Dy} &= -\bar{F}_E \cdot \cos \alpha + F_A + F_B \\ &= -120 \text{ kN} \cdot \cos 30^\circ + 20 \text{ kN} + 20 \text{ kN} \\ &= -63,9 \text{ kN} \end{aligned}$$

$$\rightarrow \sum \bar{F}_x = 0 = +F_{Dx} - F_{Ex}$$

$$F_{Dx} = F_{Ex} = F_E \cdot \sin 30^\circ = 120 \text{ kN} \cdot \sin 30^\circ = 60 \text{ kN}$$

$$F_D = \sqrt{F_{Dx}^2 + F_{Dy}^2} = \sqrt{(60 \text{ kN})^2 + (-63,9 \text{ kN})^2} = 87,7 \text{ kN}$$

Do, 09.04. 10<sup>00</sup>