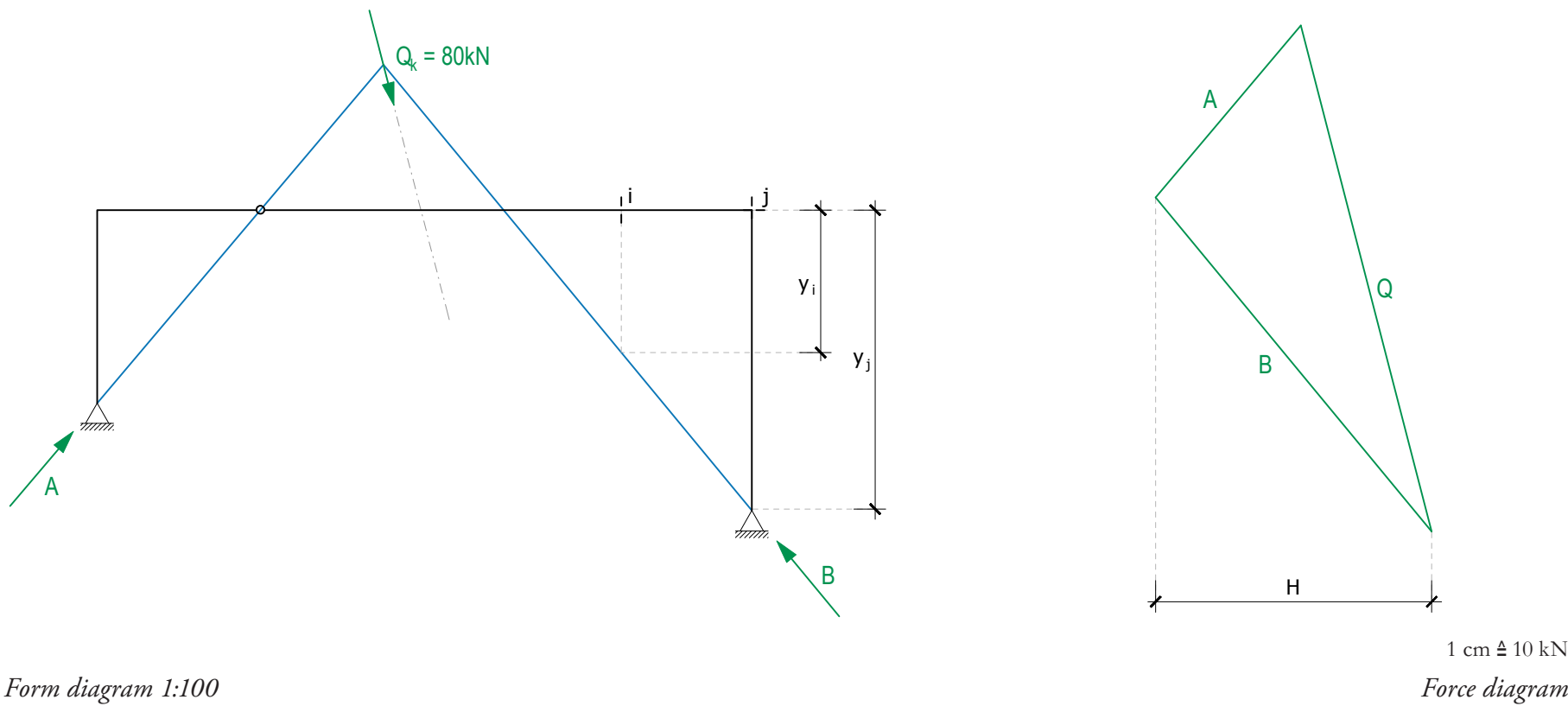


Task 1 Bendingmoment in frame owing to point load

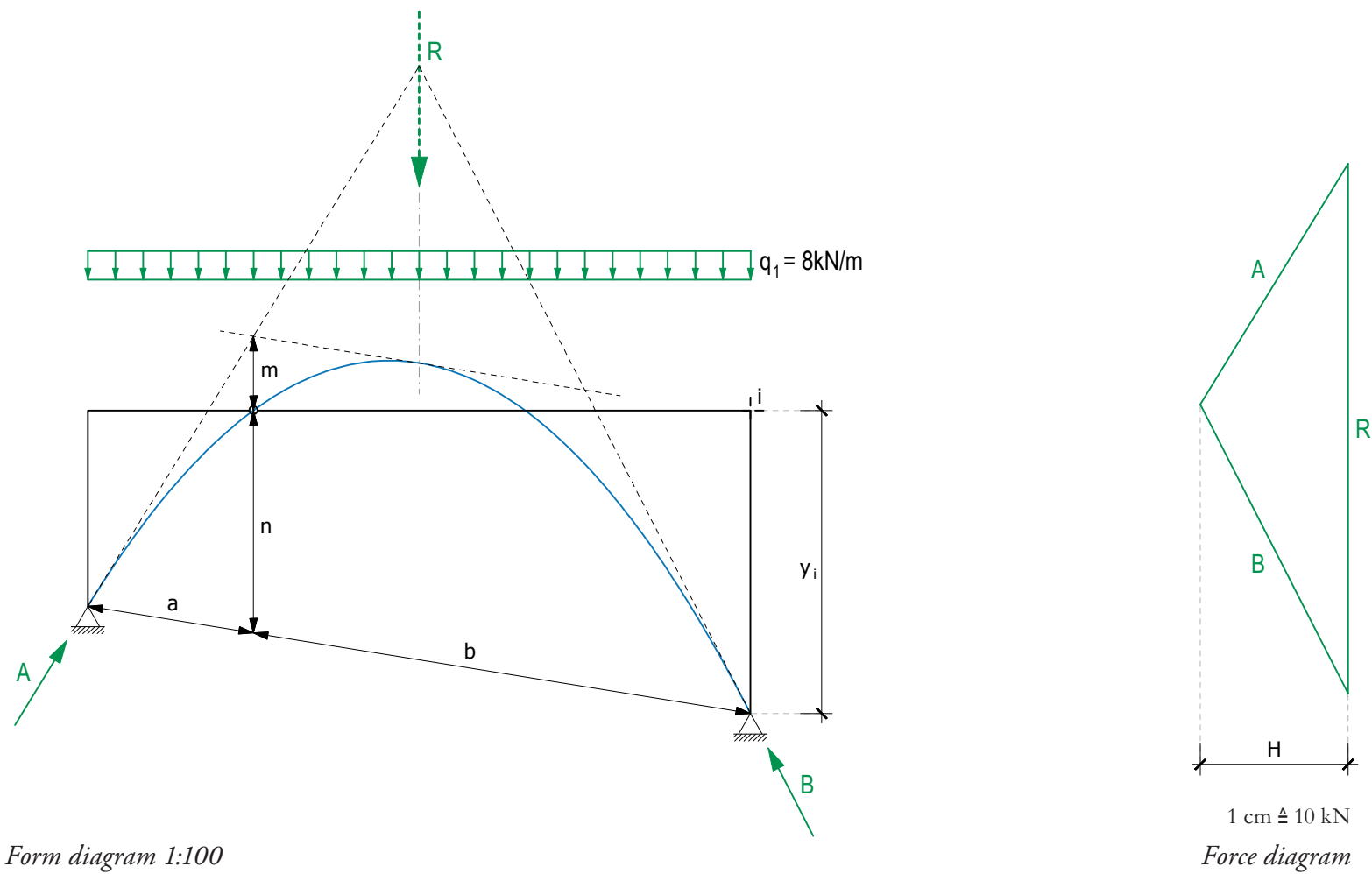
Calculate the bendingmoment with help of the support line in the frame, in point i and point j. Dimension the frame in steel S355 and find a IPE-profile.



Moment:	$H = 42 \text{ kN}$	Dimensionierung:	$M_{K \max} = M_j = 193.2 \text{ kNm}$
	$y_i = 2.2 \text{ m}$		$\gamma_Q = 1.50$
	$y_j = 4.6 \text{ m}$		$M_d = M_K \cdot \gamma_Q = 290 \text{ kNm}$
	$M_i = y_i \cdot H = 2.2 \text{ m} \cdot 42 \text{ kN} = 92.4 \text{ kNm}$		$f_{md} = f_{mk} / \gamma_M = 355 \text{ N/mm}^2 / 1.05 = 338 \text{ N/mm}^2$
	$M_j = y_j \cdot H = 4.6 \text{ m} \cdot 42 \text{ kN} = 193.2 \text{ kNm}$		$W_{req} = M_d / f_{md} = 858 \cdot 10^3 \text{ mm}^3$
			Profil = IPE 360 $\rightarrow W_{vorhanden} = 904 \cdot 10^3 \text{ mm}^3$ (Daten aus der Stahlbautabelle)

Task 2 Bendingmoment in frame owing to line load

Calculate the bendingmoment with help of the support line in the frame, in point i and the hinge.

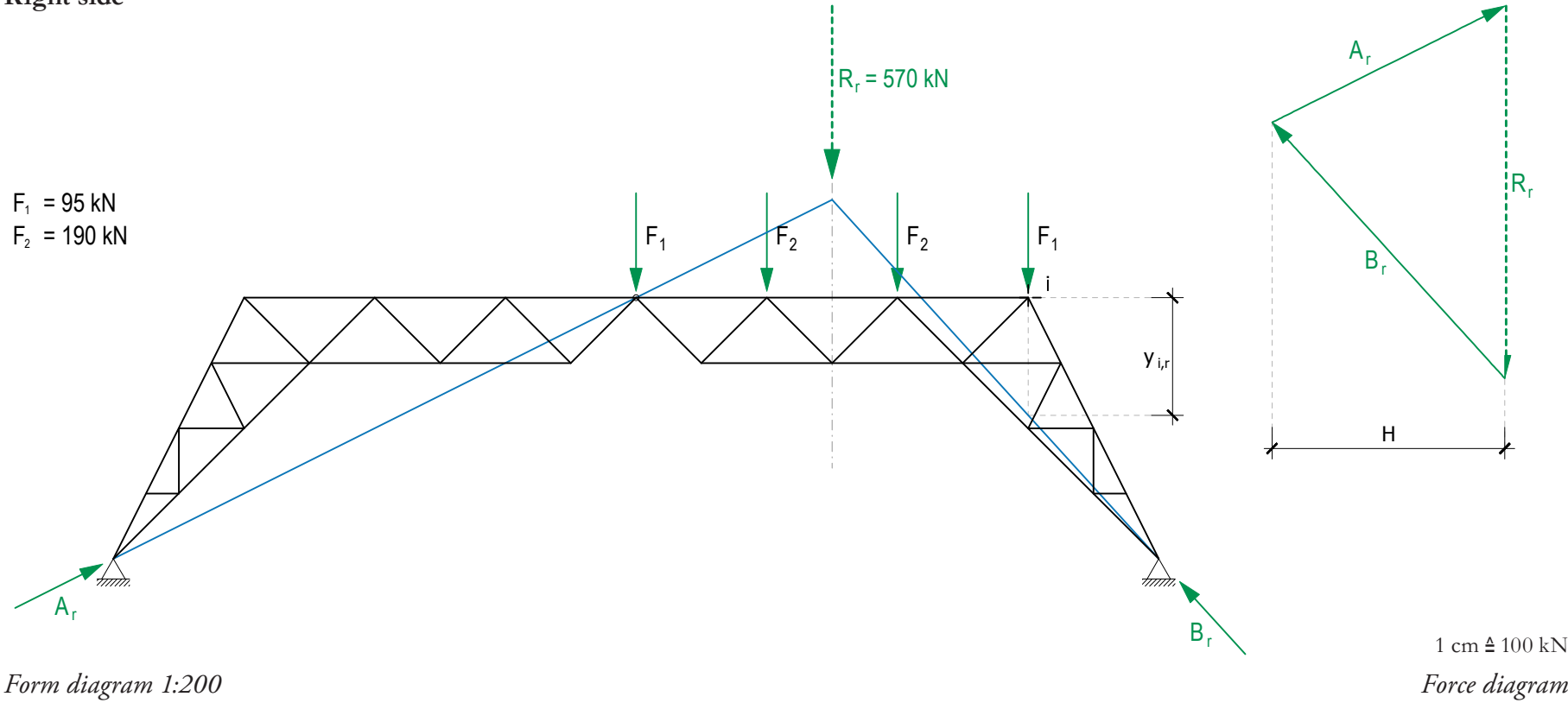


$a : b \hat{=} m : n \Rightarrow m = 1.1 \text{ m}$	Moment:	$H = 22 \text{ kN}$
		$y_i = 4.6 \text{ m}$
		$M_i = y_i \cdot H = 4.6 \text{ m} \cdot 22 \text{ kN} = 101.2 \text{ kNm}$
		$M_{\text{Gelenk}} = y_{\text{Gelenk}} \cdot H = 0.0 \text{ m} \cdot 22 \text{ kN} = 0 \text{ kNm}$

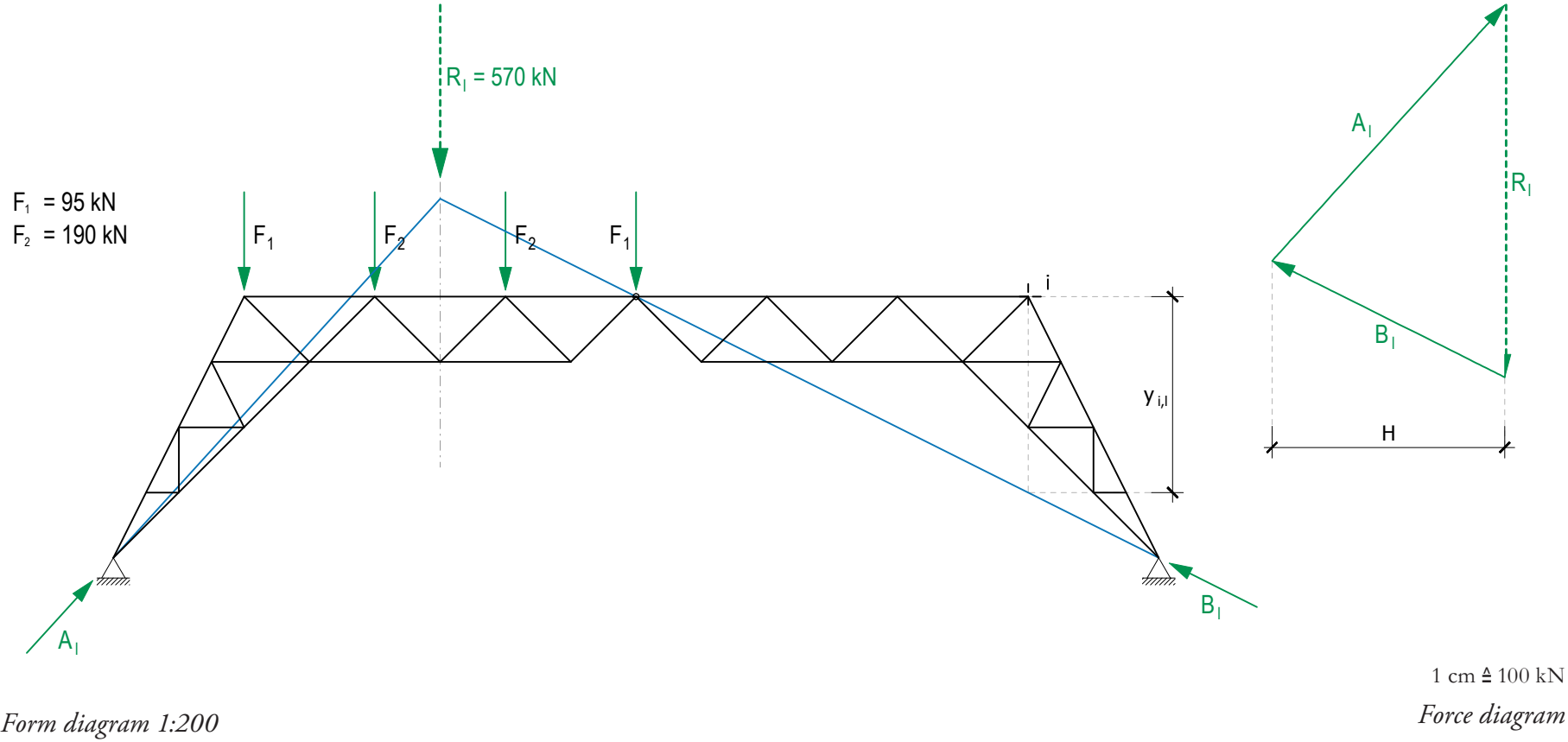
Task 3 Three-hinged truss frame

Determine the support forces A and B of the three-hinged truss frame by the use of Superposition and calculate the bending moment in point i.

Right side



Left side



Superposition of the Support force

