

$$\sum F_x = 0 \quad A_x = 0$$

$$\sum F_z = 0 \quad A_z + F_5 + F_8 + F_9 - F_6 - F_7 = 0$$

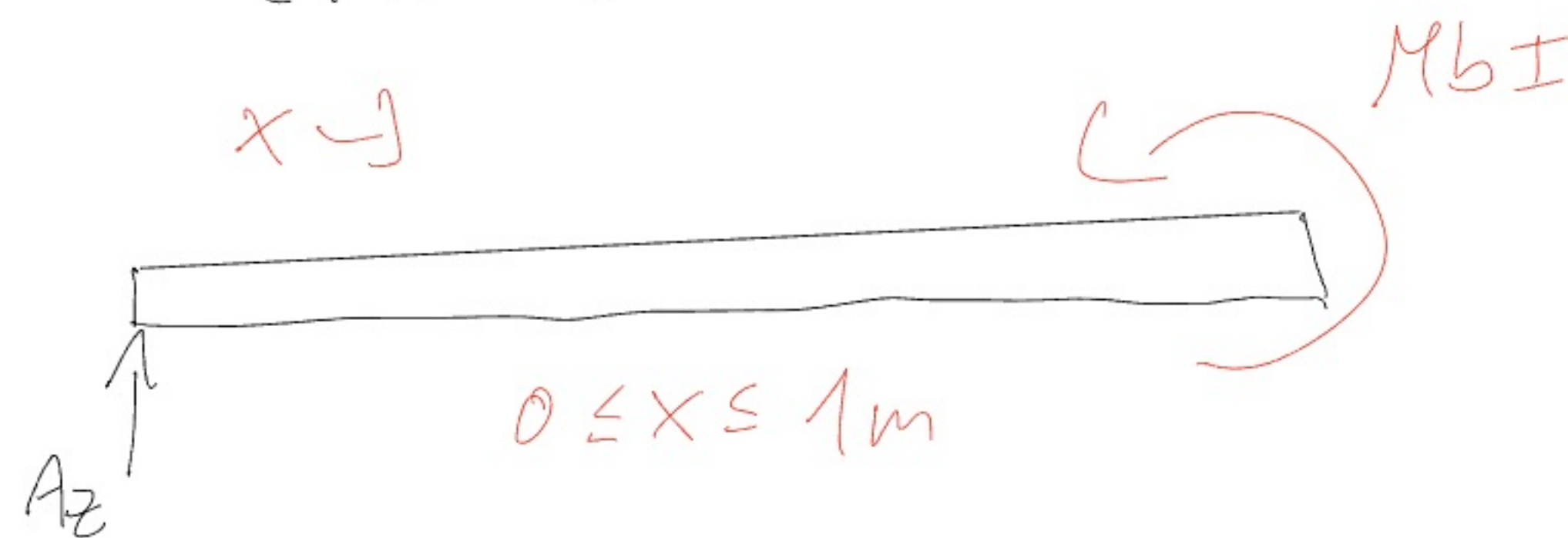
$$A_z + 60\text{kN} + 20\text{kN} + 40\text{kN} - 40\text{kN} - 40\text{kN} = 0$$

$$A_z = -60\text{kN} - 20\text{kN} - 40\text{kN} + 40\text{kN} + 40\text{kN} = 0$$

$$A_z = -40\text{kN}$$

$$A = \sqrt{(40\text{kN})^2} = 40\text{kN}$$

Schnitt (I)



$$\sum M_y^{(I)} = 0 \quad M_{bI} - A_z \cdot x = 0$$

$$M_{bI} = A_z \cdot x = 40\text{kN} \cdot x$$

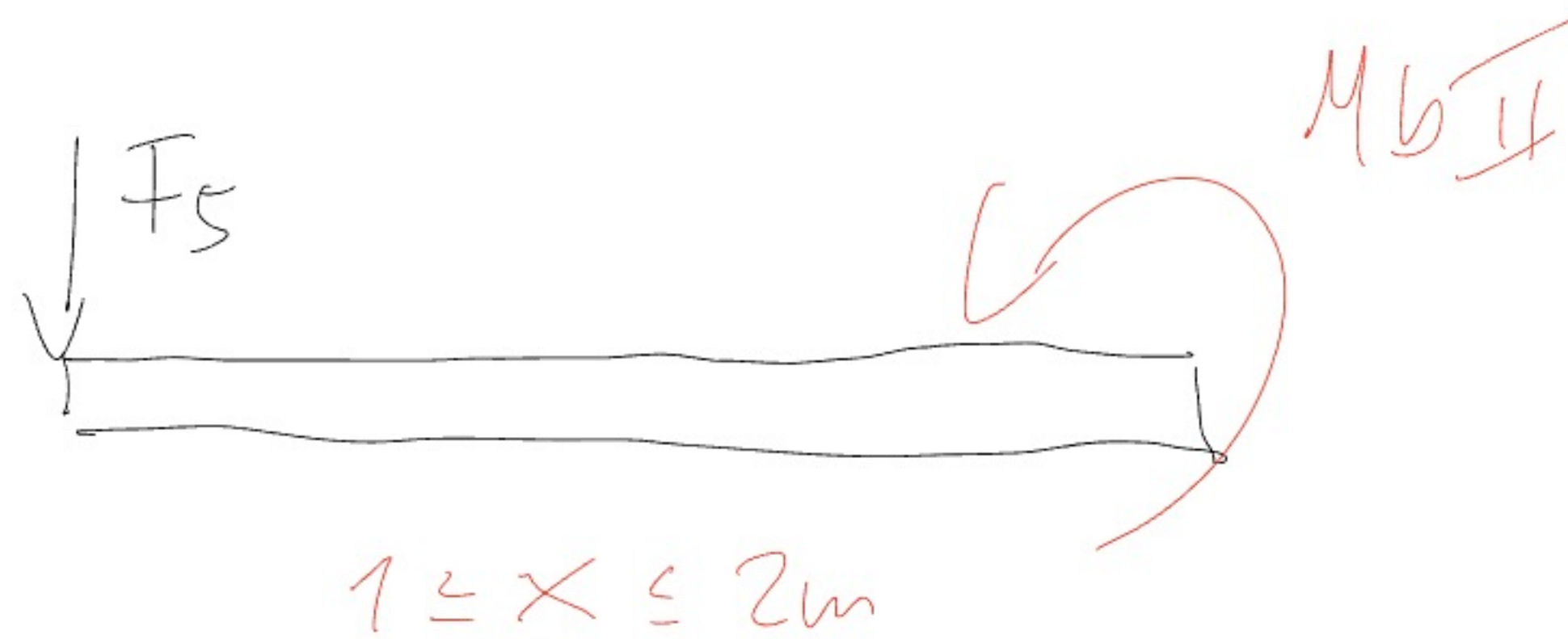
$$x = 0\text{m}$$

$$M_{bI} = 0\text{kNm}$$

$$x = 1\text{m}$$

$$M_{bI} = 40\text{kNm}$$

Schnitt II



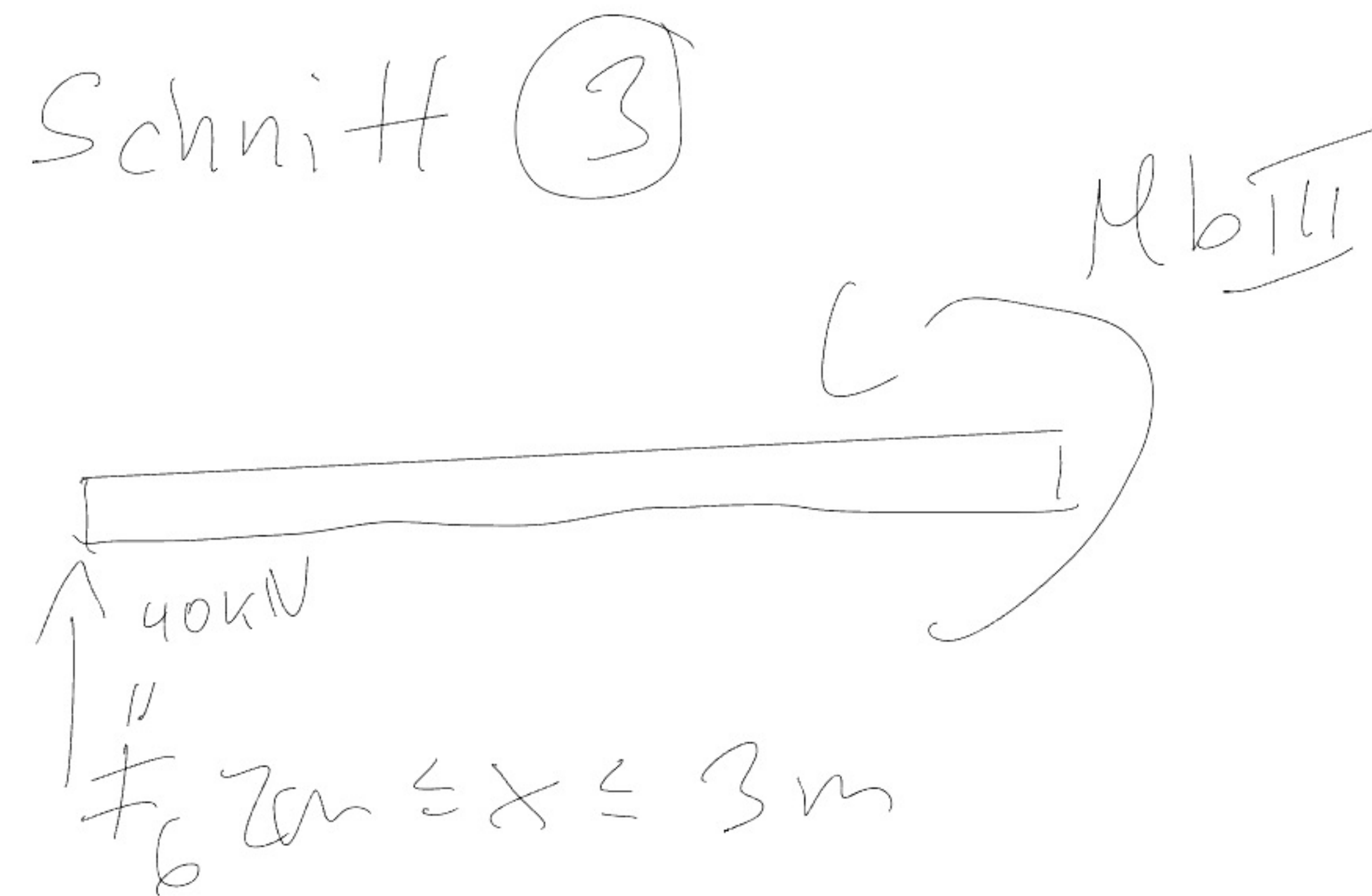
$$\sum M_y^{\text{II}} = 0 - \overset{40\text{kN}}{A_z} \cdot x + \overset{60\text{kN}}{F_5} \cdot (x - 1\text{m})$$

$$+ M_{bII} = 0$$

$$M_{bII} = \overset{40}{A_z} \cdot x - \overset{60}{F_5} \cdot (x - 1\text{m})$$

$$x = 1\text{m} \quad M_{bII} = 40\text{ kNm}$$

$$x = 2\text{m} \quad M_{bII} = 20\text{ kNm}$$



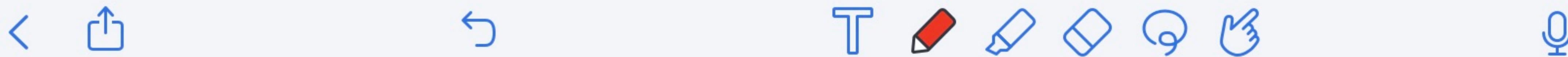
$$\sum M_y = 0 - A_z \cdot x + F_5 \cdot (x - 1 \text{ m})$$

$$- F_6 \cdot (x - 2 \text{ m}) + M_{bIII} = 0$$

$$M_{bIII} = \overset{40}{A_z} \cdot x - \overset{60}{F_5} \cdot (x - 1 \text{ m}) + \overset{40}{F_6} \cdot (x - 2 \text{ m})$$

$$x = 2 \text{ m} \quad M_{bIII} = 20$$

$$x = 3 \text{ m} \quad M_{bIII} = 40$$



$$\begin{aligned}
 \sum M_y^{(IV)} &= 0 \\
 &= A_z \cdot x + F_5 \cdot (x - 1\text{m}) \\
 &\quad - F_6 \cdot (x - 2\text{m}) \\
 &\quad - F_7 \cdot (x - 3\text{m}) \\
 &\quad + q_0 \cdot x \cdot \left(\frac{x - 3}{2} \right)
 \end{aligned}$$

$$\begin{aligned}
 M_b^{IV} &= A_z \cdot x - F_5 \cdot (x - 1\text{m}) \\
 &\quad + F_6 \cdot (x - 2\text{m}) + F_7 \cdot (x - 3\text{m}) \\
 &\quad - q_0 \cdot x \cdot \left(\frac{x - 3}{2} \right)
 \end{aligned}$$

$$x = 3\text{m} \quad M_b^{IV} = 40\text{Nm}$$

$$x = 4\text{m} \quad M_b^{IV} = 60\text{Nm}$$