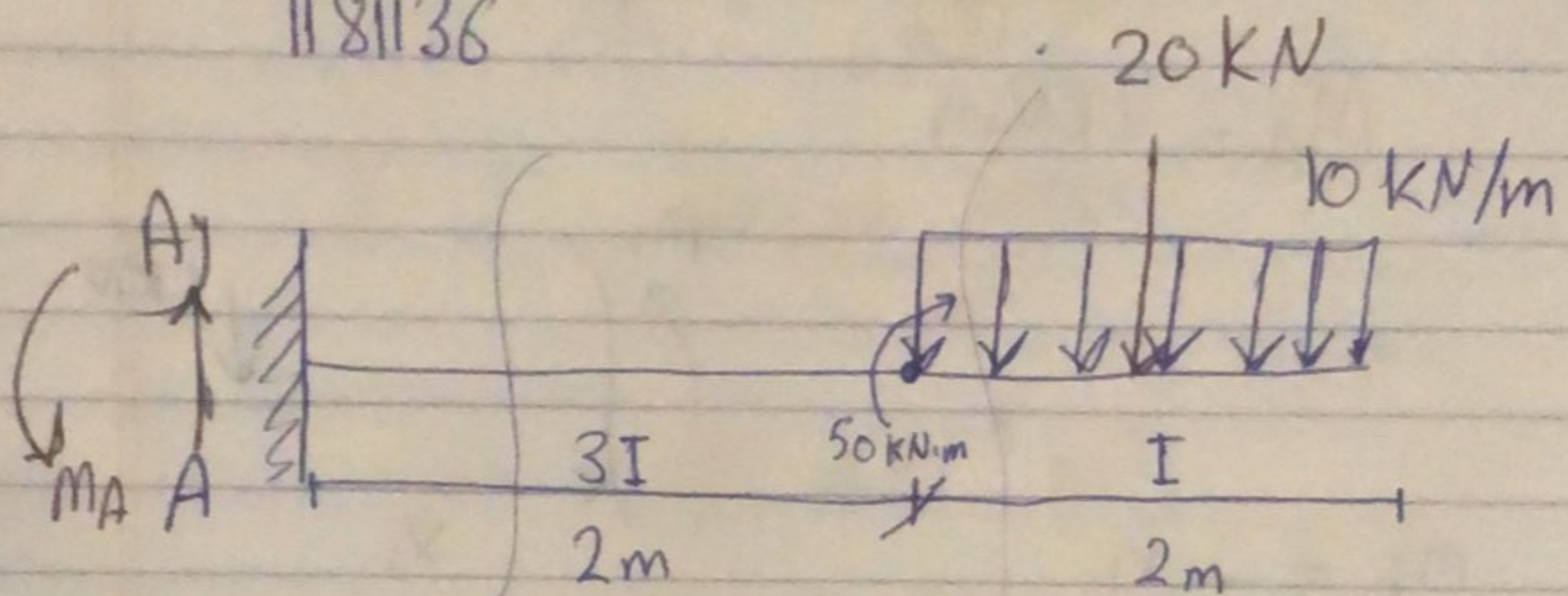


Quiz 6

Mohammad Al-Swaity

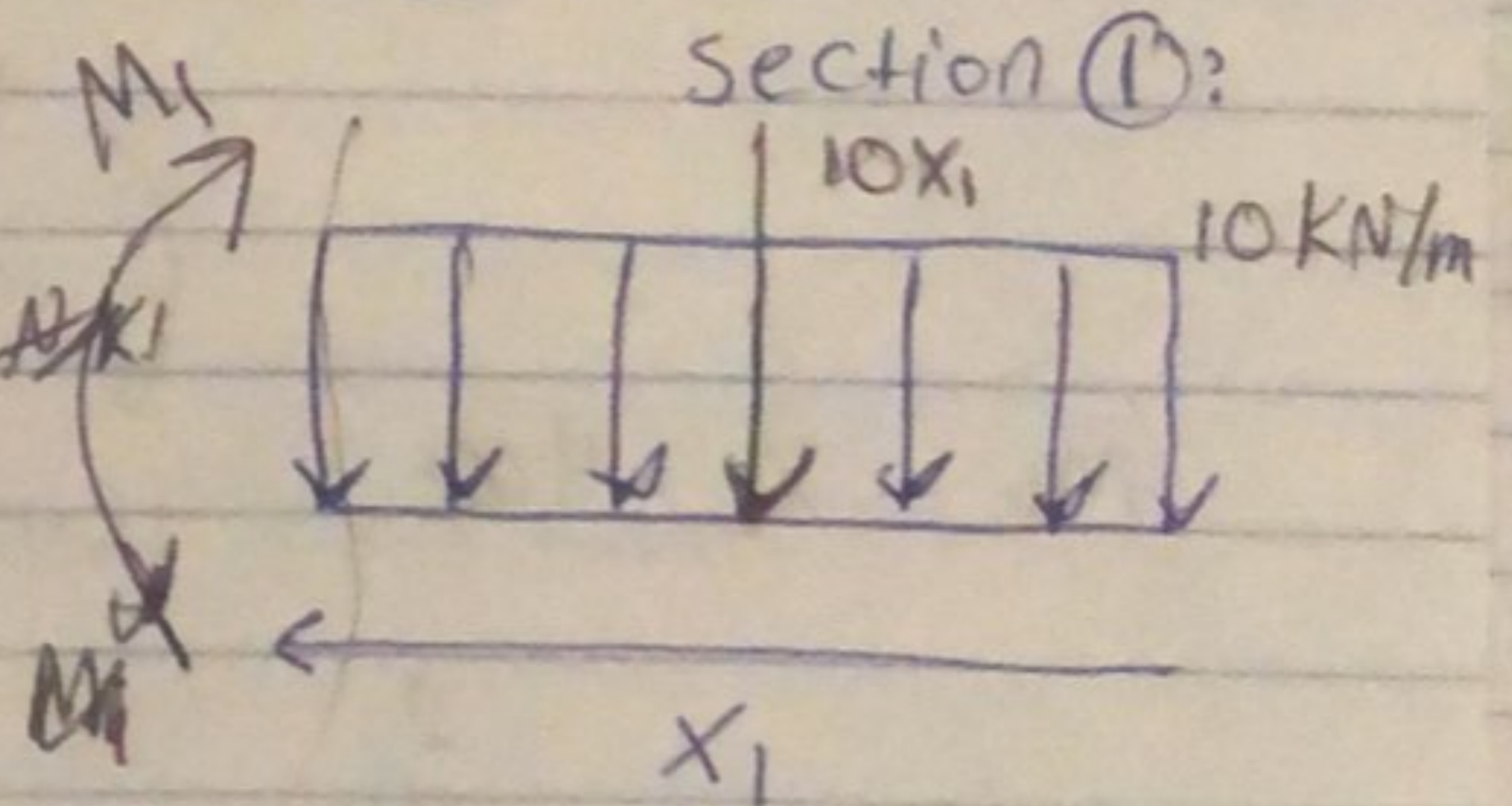
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$A_y = 20 \text{ kN}$

~~$M_A = 50 + 20 \times 2 + 10 \times 2 \times 2$~~

$M_A = 110 \text{ kN.m}$

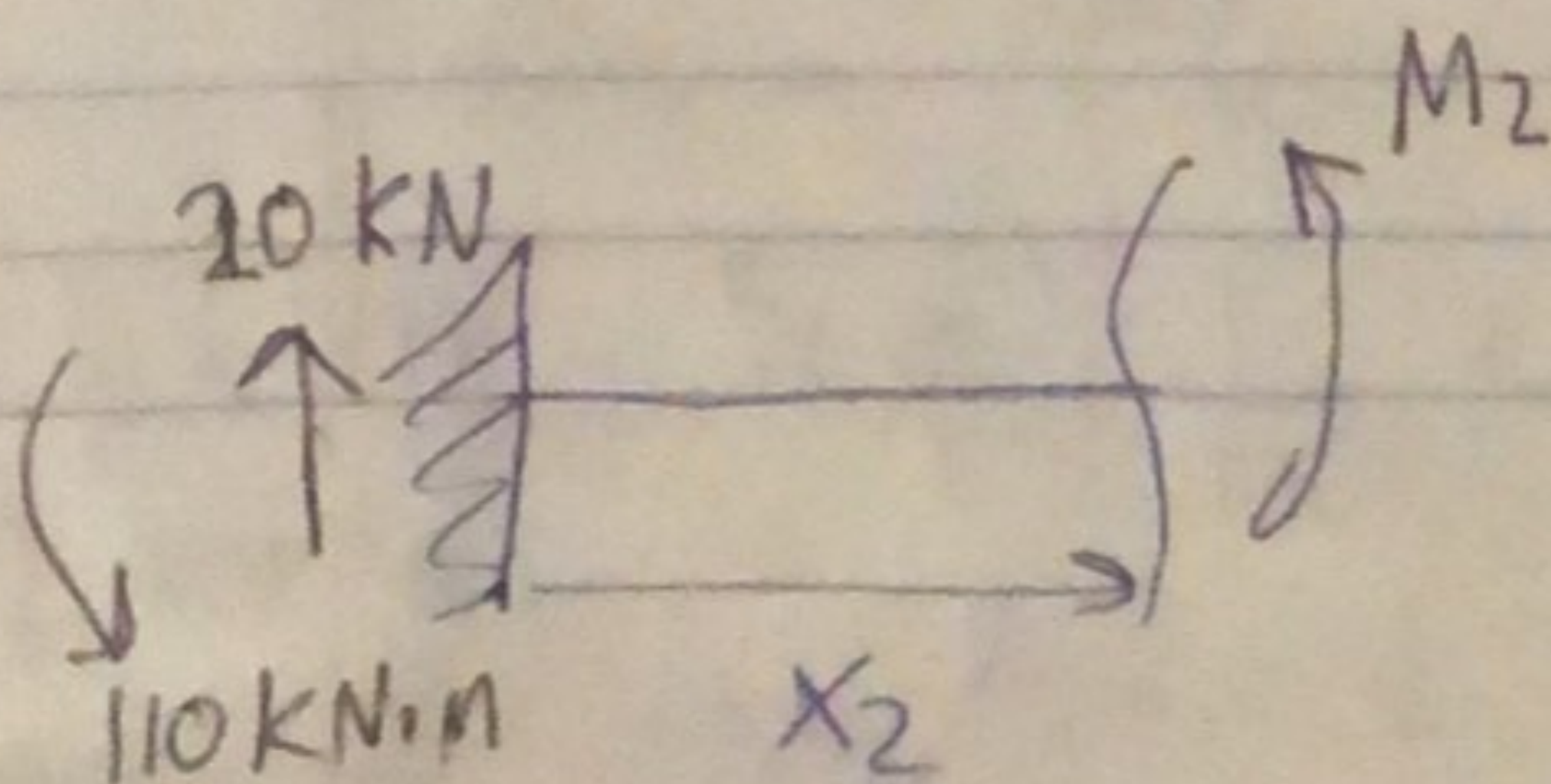


$0 < x_1 < 2$

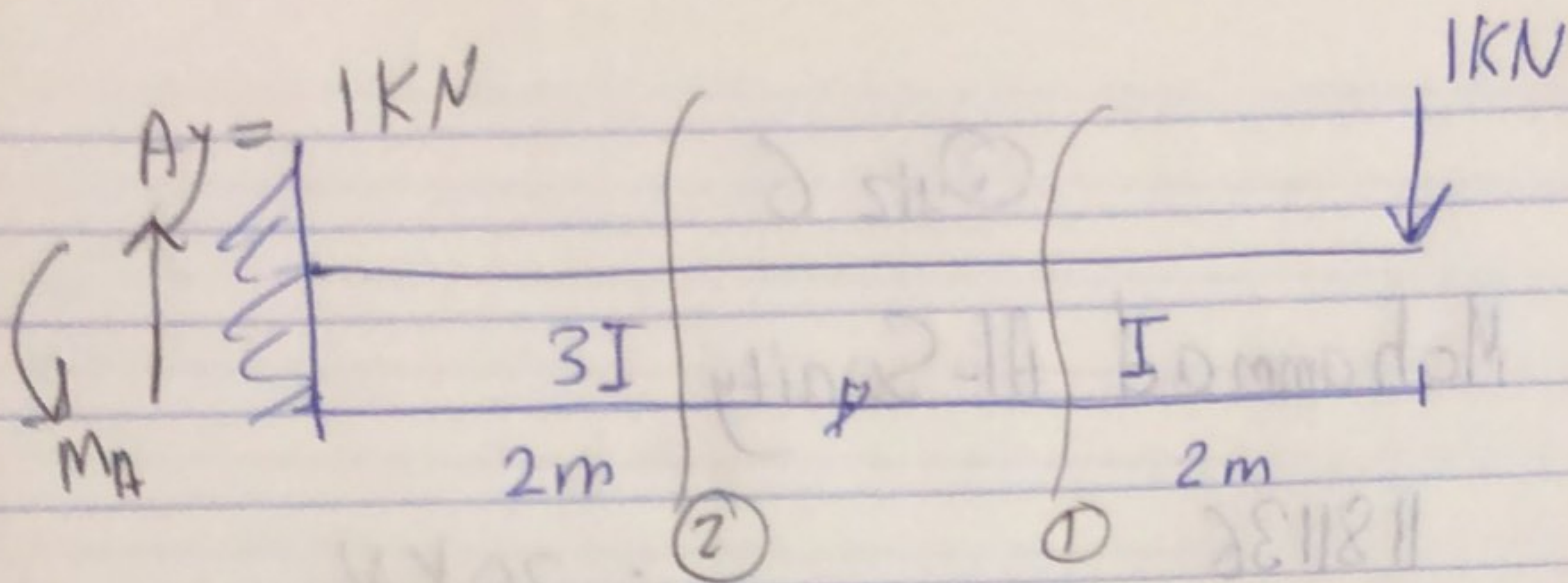
$0 < x_2 < 2$

$M_1 = -10 \frac{x_1^2}{2}$

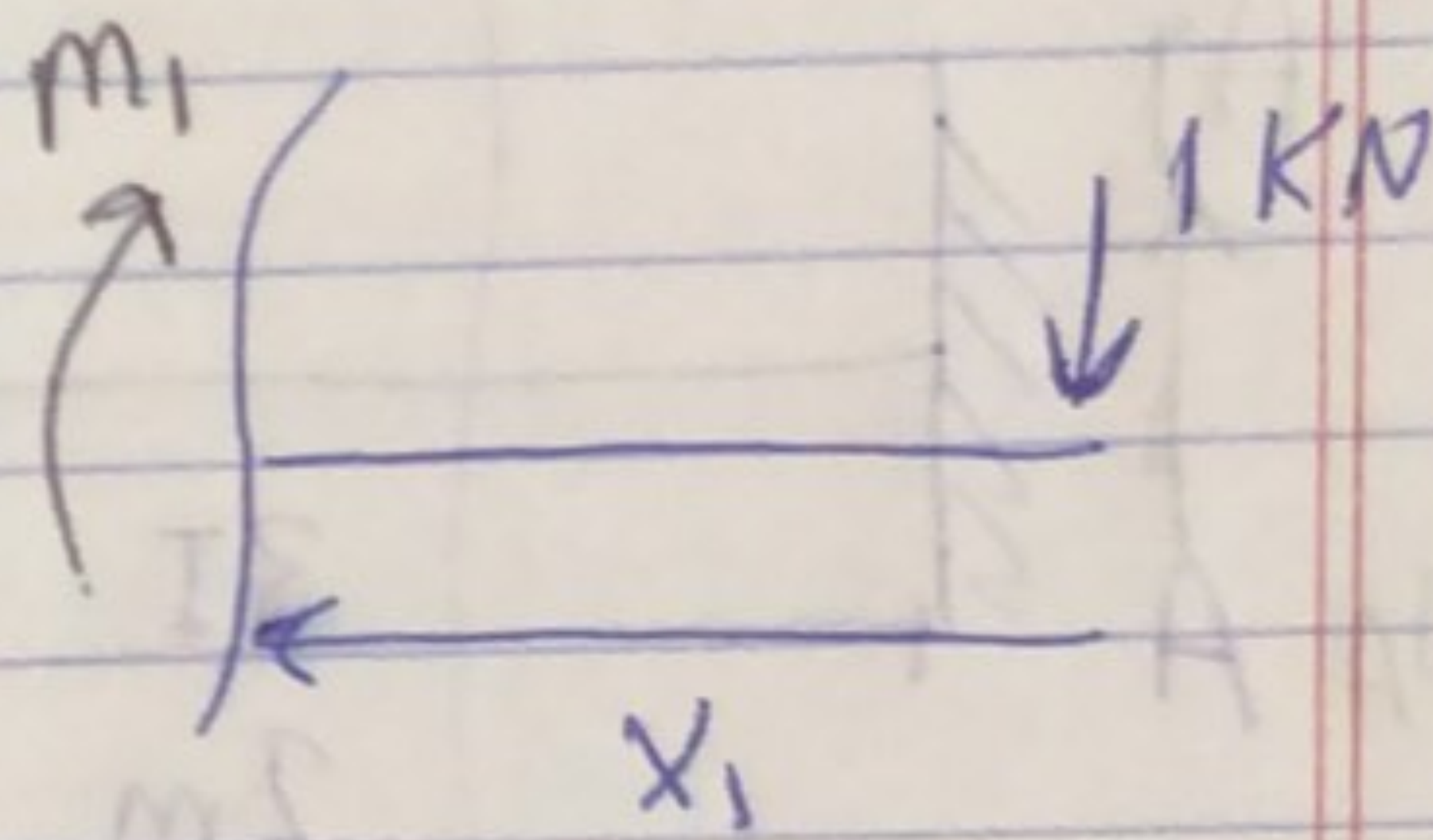
section ②:



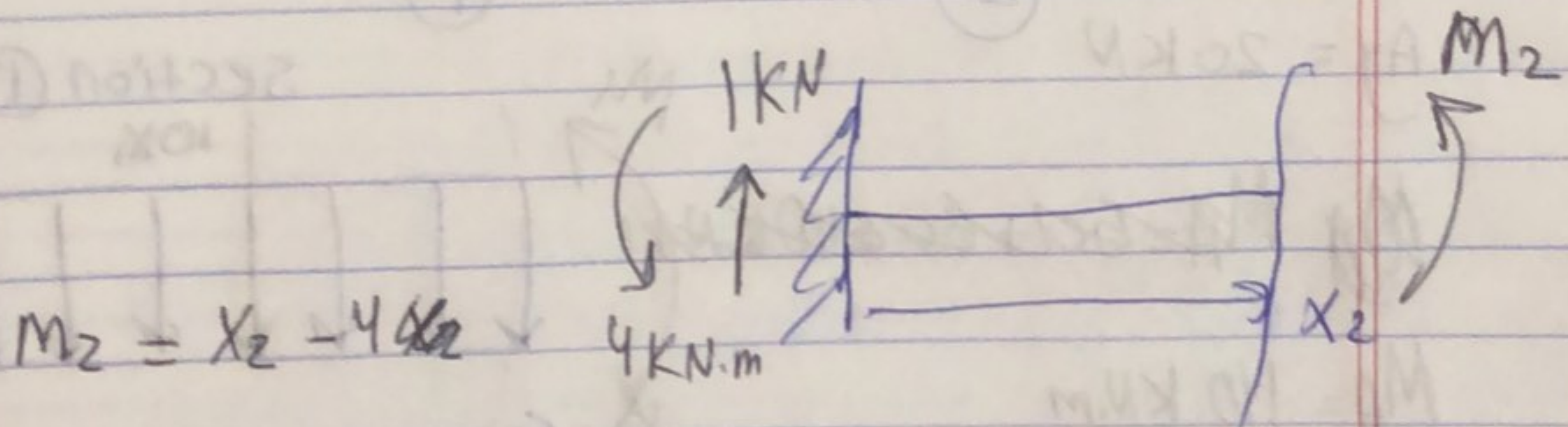
$M_2 = 20x_2 - 110$



$$M_A = 4 \text{ kN}\cdot\text{m}$$



$$m_1 = -x_1$$



$$M_2 = x_2 - 4x_2$$

$$\begin{aligned} 1 * \Delta_C &= \int_0^2 \frac{-x_1 \cdot \frac{-10x_1^2}{2}}{EI} dx + \int_0^2 \frac{20x_2 - 110 \cdot (x_2 - 4)}{3EI} dx \\ &= \frac{10}{2EI} \int_0^2 x_1^3 dx + \frac{1}{3EI} \int_0^2 (20x_2^2 - 80x_2 - 110x_2 + 440) dx \\ &= \frac{5}{4EI} x_1^4 \Big|_0^2 + \frac{1}{3EI} \left( \frac{20}{3} x_2^3 - 40x_2^2 - \frac{110}{2} x_2^2 + 440x_2 \right) \Big|_0^2 \end{aligned}$$

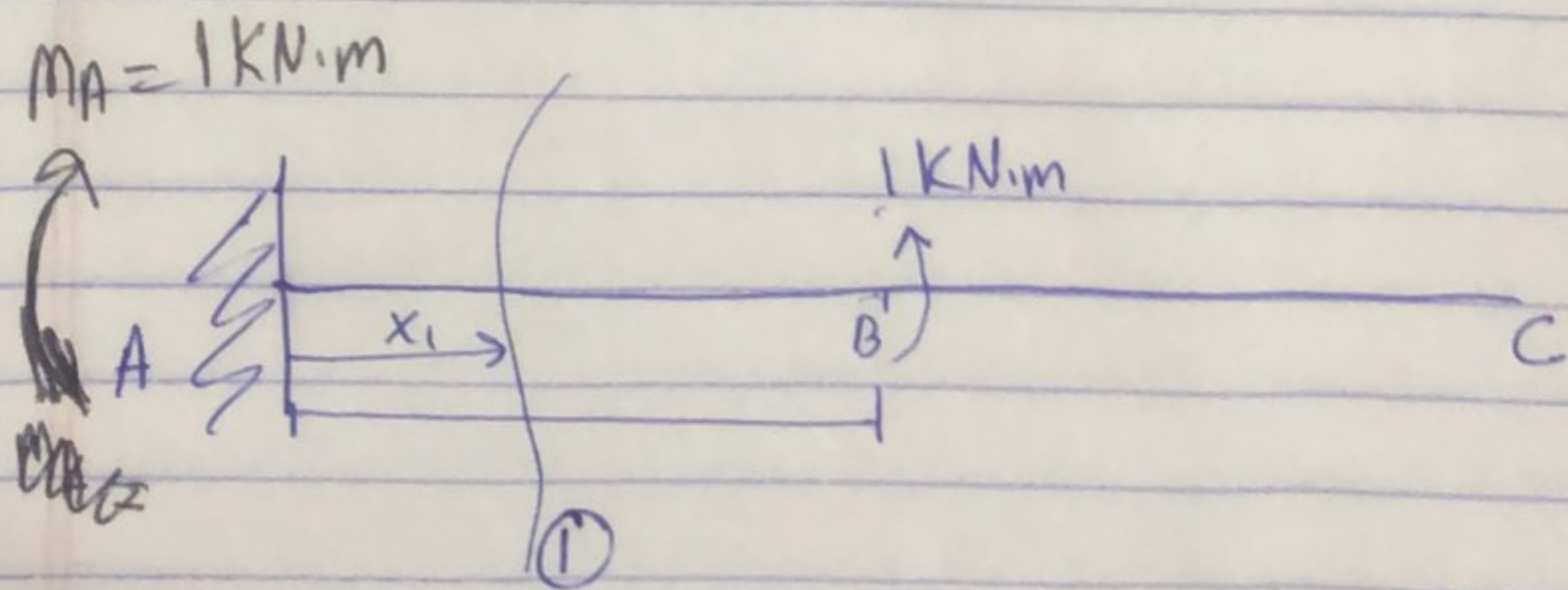
$$\rightarrow \Delta_C = \frac{80}{4EI} + \frac{1}{3EI} (553.33)$$

$$0.01 = \frac{20 \cdot 80}{EI} + 184.4$$

$$I = \frac{204.4}{0.01 \cdot 200 \cdot 10^6}$$

$$= 1.02 \cdot 10^{-4} \text{ m}^4$$

$$= 1.02 \cdot 10^8 \text{ mm}^4$$



$$M = 1 \text{ kN.m} \quad 0 < x < 2$$

$$\Theta_B = \int_0^2 \frac{(20x - 110)}{3EI} dx$$

$$= \frac{1}{3EI} \int_0^2 (20x - 110) dx \rightarrow$$

$$= \frac{1}{3EI} \left( 10x^2 - 110x \right) \Big|_0^2$$

$$= -\frac{2.94}{2.94} \times 10^{-3} \text{ rad}$$

$$= \frac{2.94}{2.94} \times 10^{-3} \text{ rad} \quad \curvearrowright$$

