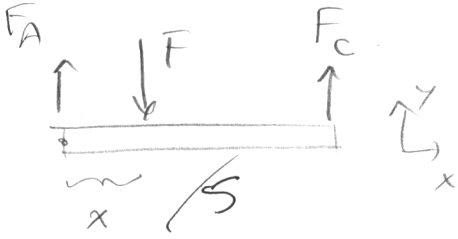
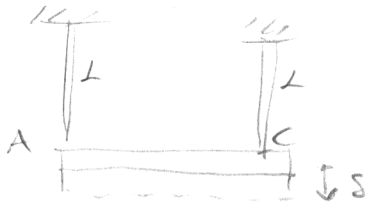


(25)



$$\sum F_y = 0 \quad / \quad F_A + F_C - F = 0 \quad (1)$$

$$+\circlearrowleft \sum M_A = 0 \quad / \quad F \cdot x - F_C \cdot 2 = 0 \quad (2)$$



Uygunluk Şartı: $\Delta_A = \Delta_C = \delta$

$$\Delta_A = \frac{F_A \cdot L}{E \cdot A_{AB}}$$

$$\Delta_C = \frac{F_C \cdot L}{E \cdot A_{CD}}$$

$$\Delta_A = \Delta_C \quad \Rightarrow$$

$$\frac{F_A \cdot L}{E \cdot \frac{\pi \cdot (5 \cdot 10^{-3})^2}{4}} = \frac{F_C \cdot L}{E \cdot \frac{\pi \cdot (12 \cdot 10^{-3})^2}{4}}$$

$$F_A = F_C \frac{(5 \cdot 10^{-3})^2}{(12 \cdot 10^{-3})^2} = \left(\frac{5}{12}\right)^2 \cdot F_C \quad (3)$$

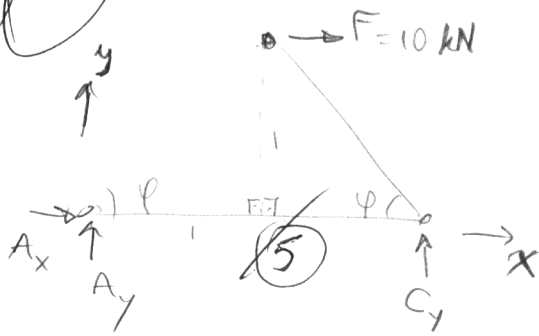
$$= 0.174 F_C$$

$$(1) \Rightarrow 0.174 F_C + F_C = F = 4 \cdot 10^3 \text{ N}$$

$$\boxed{F_C = 3.41 \cdot 10^3 \text{ N}} \Rightarrow \boxed{F_A = 0.59 \text{ kN}}$$

$$(2) \Rightarrow \frac{F \cdot x}{2} = 2 F_C \Rightarrow x = \frac{2 \cdot (3.41 \cdot 10^3)}{4 \cdot 10^3} \approx \underline{\underline{1.705 \text{ m}}}$$

2/25



$$\sum F_x = 0$$

$$F + A_x = 0 \quad (1)$$

$$\sum F_y = 0$$

$$A_y + C_y = 0 \quad (2)$$

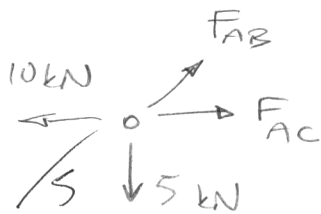
$$\sum M_A = 0 \Rightarrow C_y(2) - F(1) = 0 \quad (3)$$

$$(3) \Rightarrow C_y = F/2 = 5 \text{ kN}$$

$$(2) \Rightarrow A_y = -C_y = -5 \text{ kN}$$

$$(1) \Rightarrow A_x = -F = -10 \text{ kN}$$

A noktası



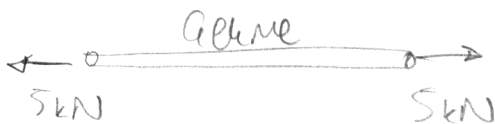
$$\sum F_x = F_{AC} + F_{AB} \cos 45^\circ - 10 = 0 \quad (4)$$

$$\sum F_y = F_{AB} \sin 45^\circ - 5 = 0 \quad (5)$$

$$(5) \Rightarrow F_{AB} = 5 / \sin 45^\circ = 7.071 \text{ kN}$$

$$(4) \Rightarrow F_{AC} = 10 - 7.071 \cdot \cos 45^\circ = 5 \text{ kN}$$

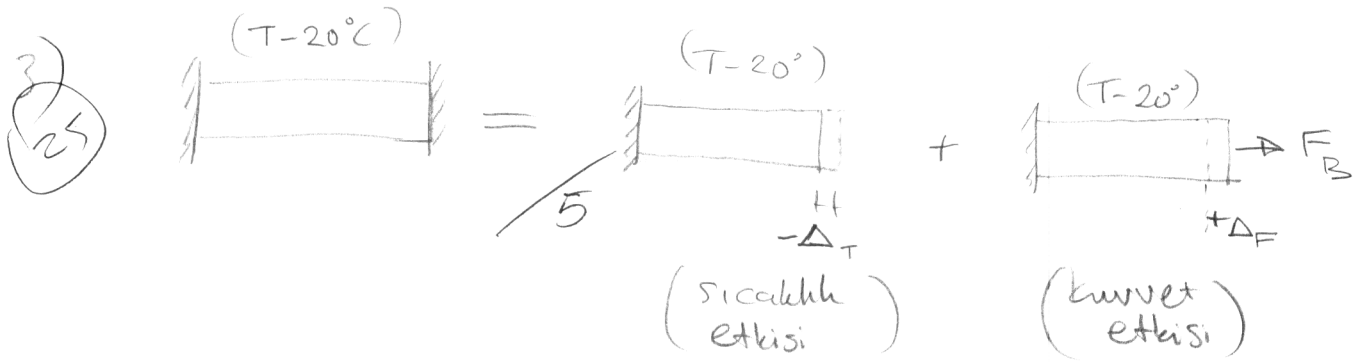
AC Çubuğu



$$\Delta L = \frac{F_{AC} \cdot L}{E \cdot A} = \frac{5 \cdot 10^3 (2)}{200 \cdot 10^9 \cdot 300 \cdot 10^{-6}}$$

$$= 1/6000 \approx 0,0001667 \text{ m}$$

$$\epsilon_{AC} = \frac{\Delta L}{L} = \frac{1}{6000 (2)} = \frac{1}{12000} = 8.3 \cdot 10^{-5}$$



Bazımlı Miktarı ;

$$\Delta_T = \alpha \Delta T \cdot L = 12 \cdot 10^{-6} (20) (1) \quad \text{5}$$

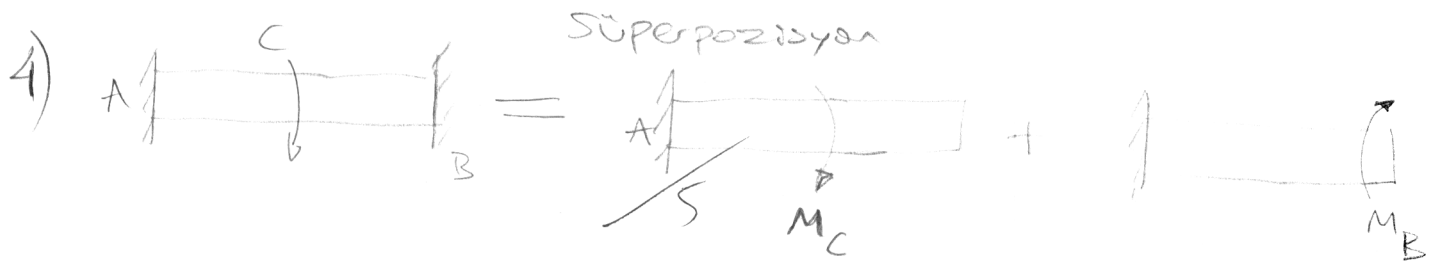
Kuvvet etkisiyle uzama ;

$$\Delta_F = \frac{F_B \cdot L}{E \cdot A} = \frac{F_B \cdot (1)}{200 \cdot 10^9 \cdot \frac{\pi \cdot (50 \cdot 10^{-3})^2}{4}} = 2.546 \cdot 10^{-9} F_B \quad \text{5}$$

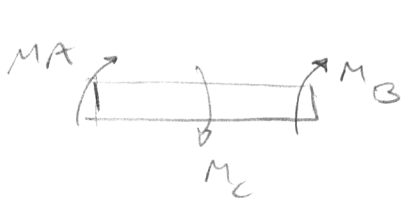
$$\Delta_T = \Delta_F \rightarrow F_B = 94247.8 \text{ N}$$

$$\sigma = \frac{F_B}{A} = 4.8 \cdot 10^7 \text{ N/m}^2 \quad \text{5} \quad \text{Gekme}$$

$$\epsilon = \frac{\Delta L}{L} = \frac{12 \cdot 10^{-6} \cdot (20)}{(1)} = \underline{\underline{2.4 \cdot 10^{-4}}} \quad \text{5}$$



$$0 = \frac{M_C L_{AC}}{J \cdot G} - \frac{M_B L}{J \cdot G} \quad (\text{Uygunluk Şartı}) \quad (1)$$



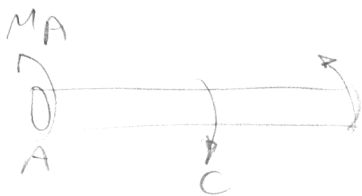
DENGE

$$\sum M_x = 0 \quad M_C - M_A - M_B = 0 \quad (2)$$

$$(1) \Rightarrow \frac{M_C L_{AC}}{J G} = \frac{M_B L}{J G} \rightarrow M_B = \frac{M_C L_{AC}}{L} = M_C \left(\frac{1}{3} \right)$$

$$(2) \rightarrow M_C - M_A - \frac{M_C}{3} = 0 \rightarrow M_A = \frac{2}{3} M_C = \frac{2 \cdot 200}{3} = \frac{400}{3} \text{ Nm}$$

$$M_B = \frac{200}{3} = 66.66 \text{ Nm} \quad \text{---} \quad = 133.33 \text{ Nm}$$



AC Parçası



$$\phi_C = \frac{M_A \cdot L_{AC}}{J \cdot G} = \frac{\left(\frac{400}{3} \right) \cdot (1)}{\frac{\pi}{2} \cdot (20 \cdot 10^{-3})^4 \cdot 80 \cdot 10^9}$$

$$J = \frac{\pi}{2} c^4$$

$$= \frac{1}{48\pi} \approx 6.63 \cdot 10^{-3} \text{ rad}$$