

Remarks: See §2.2.1, pages 19 till 21
See §2.3, pages 24 till 26
See §2.6, pages 34 onwards

Answers:

a. $\Delta \ell^{\text{CD}} = +4,5 \text{ mm}$

b. $u = 4,5 \text{ mm}$ (to the right)

Explanation:

a. $N^{\text{CD}} = +135 \text{ kN}$

$$\Delta \ell^{\text{CD}} = \frac{(135 \times 10^3 \text{ N})(2,5 \times 10^3 \text{ mm})}{75 \times 10^6 \text{ N}} = +4,5 \text{ mm}$$

b. $N^{\text{AD}} = N^{\text{DB}} = +67,5 \text{ kN}$

$$\Delta \ell^{\text{AD}} = \Delta \ell^{\text{DB}} = \frac{(67,5 \times 10^3 \text{ N})(2,5 \times 10^3 \text{ mm})}{75 \times 10^6 \text{ N}} = +2,25 \text{ mm}$$

$$u_{\text{B}}(\rightarrow) = \Delta \ell^{\text{AD}} + \Delta \ell^{\text{DB}} = +4,5 \text{ mm}$$