

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

Answers:

- a. $\sigma = 98,7 \text{ N/mm}^2$
- b. $EA = 65,97 \text{ MN}$
- c. $F = 31,0 \text{ kN}$
- d. $\Delta\ell = 0,4 \text{ mm}$

Explanation:

- a. $\sigma = (210 \times 10^3 \text{ N/mm}^2)(0,47 \times 10^{-3}) = 98,7 \text{ N/mm}^2$
- b. $EA = (210 \times 10^3 \text{ N/mm}^2)(\frac{1}{4}\pi \times (20 \text{ mm})^2) = 65,97 \text{ MN}$
- c. $F = (98,7 \text{ N/mm}^2)(\frac{1}{4}\pi \times (20 \text{ mm})^2) = 31,0 \text{ kN}$
- d. $\Delta\ell = \frac{(31,0 \times 10^3 \text{ N})(850 \text{ mm})}{(210 \times 10^3 \text{ N/mm}^2)(\frac{1}{4}\pi \times (20 \text{ mm})^2)} = 0,4 \text{ mm}$