

Opmerkingen: Zie §6.2, blz. 378 t/m 381
 Zie §6.4, voorbeeld 2, blz. 403 t/m 407

Antwoorden:

- a. $\tau_{\max} = 37,7 \text{ N/mm}^2$
- b. $\varphi_B = 1,77 \times 10^{-3} \text{ rad}$
- c. $\varphi_C = 30,06 \times 10^{-3} \text{ rad}$

Toelichting:

$$I_p^{AB} = 405\pi \times 10^3 \text{ mm}^4; I_p^{BC} = 25,31\pi \times 10^3 \text{ mm}^4$$

- a. De maximum schuifspanning treedt op in BC:

$$\tau_{\max} = \frac{(200 \times 10^3 \text{ Nmm})(15 \text{ mm})}{25,31\pi \times 10^3 \text{ mm}^4} = 37,7 \text{ N/mm}^2$$

$$\text{b. } \varphi_B = \frac{(200 \times 10^3 \text{ Nmm})(900 \text{ mm})}{(80 \times 10^3 \text{ N/mm}^2)(405\pi \times 10^3 \text{ mm}^3)} = 1,77 \times 10^{-3} \text{ rad}$$

$$\text{c. } \Delta\varphi^{BC} = \frac{(200 \times 10^3 \text{ Nmm})(900 \text{ mm})}{(80 \times 10^3 \text{ N/mm}^2)(25,31\pi \times 10^3 \text{ mm}^3)} = 28,29 \times 10^{-3} \text{ rad}$$

$$\text{Dus: } \varphi_C = \varphi_B + \Delta\varphi^{BC} = 30,06 \times 10^{-3} \text{ rad}$$