

Remarks: See §4.8, pages 198 till 203

Answers:

- The mid-span cross-section.
- $\sigma_{\max} = 16,2 \text{ N/mm}^2$ in the corner points 2 and 3
- $\sigma_1 = -5,4 \text{ N/mm}^2$
 $\sigma_2 = -16,2 \text{ N/mm}^2$
 $\sigma_3 = +16,2 \text{ N/mm}^2$
 $\sigma_4 = +5,4 \text{ N/mm}^2$
- neutral axis: $y + z = 0$

Explanation:

$$I_{zz} = 66,67 \times 10^6 \text{ mm}^4; M_{z;\max} = 7,2 \text{ kNm}$$

$$I_{yy} = 16,67 \times 10^6 \text{ mm}^4; M_{y;\max} = 1,8 \text{ kNm}$$

$$\sigma(y, z) = \frac{(1,8 \times 10^6 \text{ Nmm}) \times y}{16,67 \times 10^6 \text{ mm}^4} + \frac{(7,2 \times 10^6 \text{ Nmm}) \times z}{66,67 \times 10^6 \text{ mm}^4} = (108 \times 10^{-3} \text{ mm}^3)(y + z)$$

$$\text{Neutral axis: } \sigma(y, z) = 0 \Rightarrow y + z = 0$$

