Remarks: See §4.4, pages 168 till 170
See §4.5, pages 171 till 184

Answers:

b. $\sigma_t = 0$ and $\sigma_b = -80$ N/mm^2

c. $\sigma_t = -10$ N/mm^2 and $\sigma_b = -50$ N/mm^2

Explanation:

b. Cross section B:

$M_z = -60$ kNm and $N = -240$ kN

$$\sigma^{(N)} = \frac{-240\times10^3 \text{ N}}{12\times10^3 \text{ mm}^2} = -20 \text{ N/mm}^2$$

$$\sigma_t^{(M)} = \frac{(-60\times10^3 \text{ Nmm})(-150 \text{ mm})}{450\times10^6 \text{ mm}^2} = +20 \text{ N/mm}^2$$

$$\sigma_b^{(M)} = \frac{(-60\times10^3 \text{ Nmm})(+450 \text{ mm})}{450\times10^6 \text{ mm}^2} = -60 \text{ N/mm}^2$$

c. Cross-section halfway of AB:

$M_z = -30$ kNm en $N = -240$ kN

$\sigma^{(N)} = -20$ N/mm^2

$\sigma_t^{(M)} = +10$ N/mm^2

$\sigma_b^{(M)} = -30$ N/mm^2