

[Remarks:](#) See § 4.4, pages 168 till 170

[Hints:](#)

First draw the moment-diagram.

[Answers:](#)

a. $x = 3 \text{ m}$, at the bottom of the beam: $\sigma = +60 \text{ N/mm}^2$

b. $x = 6 \text{ m}$, at the bottom of the beam: $\sigma = -60 \text{ N/mm}^2$

[Explanation:](#)

The moment extremes occur at:

$x = 3 \text{ m}$ (Maximum span moment): $M = 30 \text{ kNm}$ ($\smile$)

$x = 6 \text{ m}$: (Support-point moment): $M = 30 \text{ kNm}$ ($\frown$)

$$\text{At } x = 3 \text{ m: } \sigma_b = \frac{(30 \times 10^6 \text{ Nmm})(+300 \text{ mm})}{150 \times 10^6 \text{ mm}} = +60 \text{ N/mm}^2$$

$$\sigma_t = -30 \text{ N/mm}^2$$

$$\text{At } x = 6 \text{ m: } \sigma_b = \frac{(-30 \times 10^6 \text{ Nmm})(+300 \text{ mm})}{150 \times 10^6 \text{ mm}} = -60 \text{ N/mm}^2$$

$$\sigma_t = +30 \text{ N/mm}^2$$