Remarks: See §5.4.3 pages 342 till 355
See §5.7.2 page 384

Hint:

Think of the rules regarding the shear stress distribution summarized in §5.7.2.

Answers:

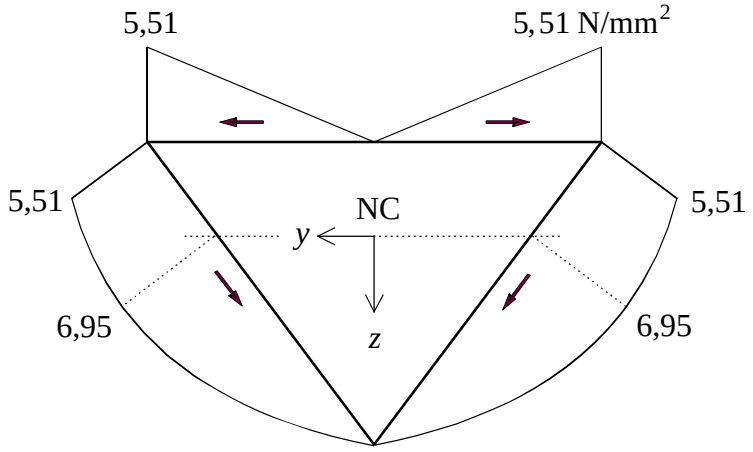
d. At the top corner points: $\tau = 5,51 \text{ N/mm}^2$
At the bottom corner point: $\tau = 0$

e. $\tau_{max} = 6,95 \text{ N/mm}^2$; in both inclined webs at the height of the normal centre.

Explanation:

b. units in mm:

$$I_{zz} = 2\left[\left(\tfrac{1}{12}\times\tfrac{5}{4}\times 10\times 240^3\right)+\left(10\times 300\times 45^2\right)\right]+\left(360\times 10\times 75^2\right)$$



d The shear stress distribution in the top flange varies linearly:

$$\tau_{middle} = 0$$

$$\tau_{corner} = \frac{(25\times 10^3 \text{ N})(270\times 10^3 \text{ mm}^3)}{(2\times 10 \text{ mm})(61{,}2\times 10^6 \text{ mm}^4)} = 5,51 \text{ N/mm}^2$$

The shear stress distribution in the two inclined webs is parabolic:

$\tau_{top} = 5,51 \text{ N/mm}^2$ ('inflow' = 'outflow')

$$\tau_{max} = \frac{(25\times 10^3 \text{ N})(340312{,}5 \text{ mm}^3)}{(2\times 10 \text{ mm})(61{,}2\times 10^6 \text{ mm}^4)} = 6,95 \text{ N/mm}^2$$

$\tau_{bottom} = 0$