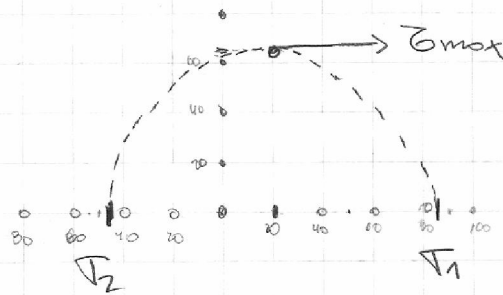


$$\begin{aligned}\sigma_x &= 80 \text{ MPa} \\ \sigma_y &= -40 \text{ MPa} \\ \tau_{xy} &= 25 \text{ MPa}\end{aligned}$$

$$\sigma_{1,2} = \frac{(\sigma_x + \sigma_y)}{2} \pm \sqrt{\left(\frac{\sigma_x - \sigma_y}{2}\right)^2 + \tau_{xy}^2}$$

$$\begin{aligned}\sigma_{1,2} &= \frac{80 - 40}{2} \pm \sqrt{\left(\frac{80 + 40}{2}\right)^2 + 25^2} \\ &= 20 \pm 65\end{aligned}$$

$$\begin{aligned}\sigma_1 &= 85 \text{ MPa} \\ \sigma_2 &= -45 \text{ MPa} \\ \tau_{\max} &= 65 \text{ MPa}\end{aligned}$$



b) Tresca:

$$|\sigma_1 - \sigma_2| \leq \frac{\sigma_f}{f_s} \Rightarrow f_s = \frac{250}{130}$$

$$\Rightarrow f_s = 1,923$$

$$c) \sigma_1^2 - \sigma_1 \sigma_2 + \sigma_2^2 \leq \left(\frac{\sigma_1}{f_s} \right)^2$$

$$85^2 + 85 \cdot 45 + 45^2 = \left(\frac{250}{f_s} \right)^2$$

$$f_s^2 = \frac{62500}{13075}$$

$$\Rightarrow \boxed{f_s = 2,1863}$$