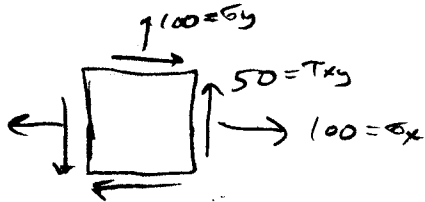


EX)

GIVEN:

STATE OF STRESS:



IN METAL W/  $S_y = 300$

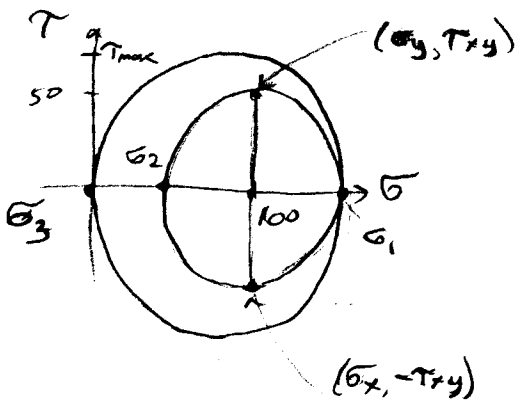
FIND:

SAFETY FACTORS

USING MAX. SHEAR THEORY

AND MAX. DISTORTION THEORY

MOHR CIRCLES



$\Rightarrow$

$$\sigma_1 = 150$$

$$\sigma_2 = 50$$

$$\tau_{max} = \frac{\sigma_1}{2} = 75$$

$$SF_{MAX\ SHEAR} = \frac{S_y/2}{\tau_{max}} = \boxed{2.0}$$

FOR MAX. DIST

$$\sigma_e = \sqrt{\sigma_1^2 + \sigma_2^2 - \sigma_1 \sigma_2} = 132.3$$

$$\text{or } \sqrt{\sigma_x^2 + \sigma_y^2 - \sigma_x \sigma_y + 3\tau_{xy}^2} = 132.3$$

SO

$$SF_{MAX\ DIST} = \frac{S_y}{\sigma_e} = \boxed{2.3}$$

