Topic

Mohr's Circle

Governing Equations and Assumptions

$$\sigma_{aver} = \frac{\sigma_x + \sigma_y}{2}$$

$$R = \sqrt{\left(\frac{\sigma_x - \sigma_y}{2}\right)^2 + \tau_{xy}^2}$$

$$\theta = 0° \implies \sigma_{x_1} = \sigma_x , \quad \tau_{x_1 y_1} = \tau_{xy}$$

$$\theta = 90° \implies \sigma_{x_1} = \sigma_y , \quad \tau_{x_1 y_1} = -\tau_{xy}$$

Process

① Draw the coordinate axes ($\tau_{x_1 y_1} \implies$ downward)

② Determine the center and radius of the circle

③ Locate $\theta = 0°$ & $\theta = 90°$

④ Draw Mohr's Circle