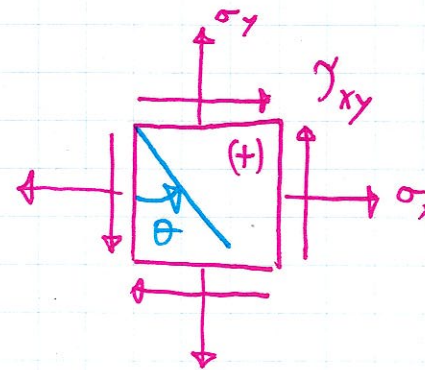


STRESS TRANS. EQNS.

POS. SIGN CONV.



$$\sigma_x = -60 \text{ MPa}$$

$$\sigma_y = -40 \text{ MPa}$$

$$\tau_{xy} = 35 \text{ MPa}$$

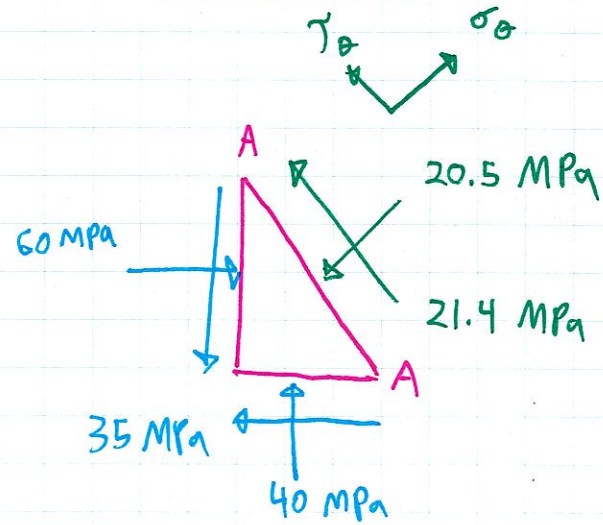
$$\theta = 35^\circ$$

"Measured CCW from a vertical line"

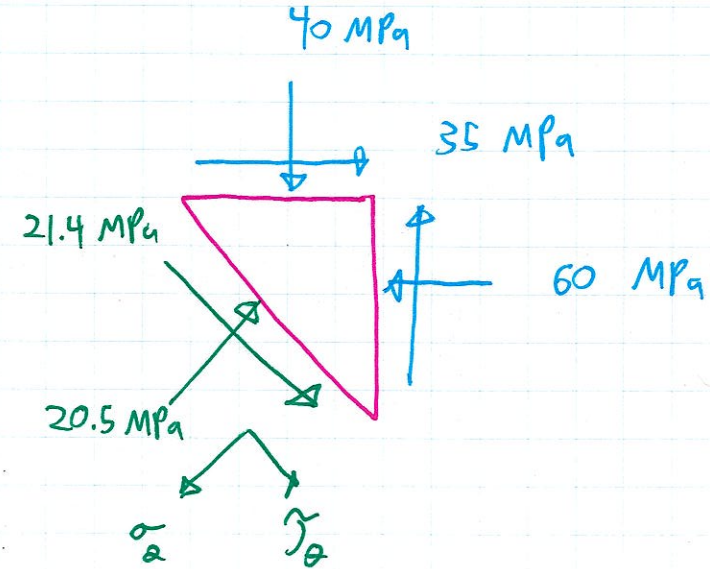
$$\sigma_\theta = \frac{\sigma_x + \sigma_y}{2} + \frac{\sigma_x - \sigma_y}{2} \cos 2\theta + \tau_{xy} \sin 2\theta = -20.5 \text{ MPa}$$

$$\tau_\theta = -\left(\frac{\sigma_x - \sigma_y}{2}\right) \sin 2\theta + \tau_{xy} \cos 2\theta = 21.4 \text{ MPa}$$

PROP. ORIENTED SKETCH



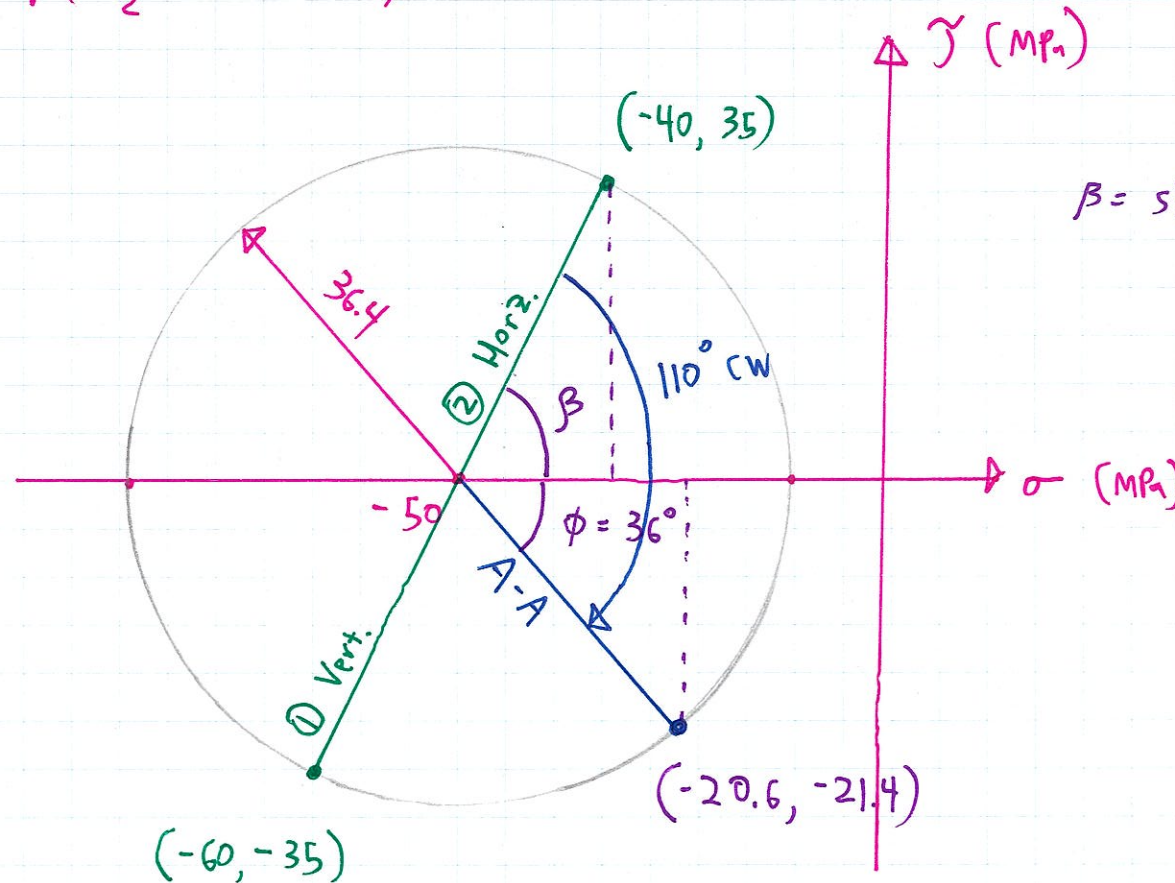
-or-



$$\sigma_{\text{CENTER}} = \frac{\sigma_x + \sigma_y}{2} = -50 \text{ MPa}$$

$$\text{RAD} = \sqrt{\left(\frac{\sigma_x - \sigma_y}{2}\right)^2 + \tau_{xy}^2} = 36.4 \text{ MPa}$$

MOHR'S CIR. SIGN FOR SHEAR



$$\beta = \sin^{-1}\left(\frac{35}{36.4}\right) = 74^\circ$$

PROP. ORIENT. SKETCH

