21.03 Mohr's circle

Normal Stress, $\sigma_x = 4.00$ ksi

Normal Stress, $\sigma_y = -8.00$ ksi,

Shear Stress, $\tau_{xy} = 6.00$ ksi

Mohr's circle contd.

- Shear Stress, $\tau\_max = 1/2 \cdot ((\sigma_x - \sigma_y)^2 + 4 \cdot \tau_{xy}^2)^{0.5} = 8.49$ ksi

- Principal Stress, $\sigma_1 = 1/2 \cdot (\sigma_x + \sigma_y) + \tau_{max} = 6.49$ ksi

- Principal Stress, $\sigma_2 = 1/2 \cdot (\sigma_x + \sigma_y) - \tau_{max} = -10.49$ ksi

Mohr's circle contd.

- Angle, $\theta_1 = 1/2 \cdot \tan^{-1}(2 \cdot \tau_{xy}/(\sigma_x - \sigma_y))$

$= 22.50$ degrees,

- Angle, $\theta_2 = \theta_1° + 90° = 112.50$ degrees

- Stress at Mohr's Circle Center, σ_c

$= 1/2 \cdot (\sigma_x + \sigma_y)$

Mohr's circle contd.

- Radius of Mohr's Circle, R

$= 1/2 \cdot ((\sigma_x - \sigma_y)^2 + 4 \cdot \tau_{xy}^2)^{0.5} = 8.49$ ksi

- Stress at Mohr's Circle Center, σ_c

$= 1/2 \cdot (\sigma_x + \sigma_y) = -2.00$ ksi,

- Radius of Mohr's Circle, R

$= 1/2 \cdot ((\sigma_x - \sigma_y)^2 + 4 \cdot \tau_{xy}^2)^{0.5}$