

# Homework 1

October 22, 2024

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**2-9**

Since,

$$\epsilon_n = \frac{\epsilon_x + \epsilon_y}{2} + \frac{\epsilon_x - \epsilon_y}{2} \cos 2\alpha + \frac{\gamma_{xy}}{2} \sin 2\alpha$$

$$\epsilon_t = \frac{\epsilon_x + \epsilon_y}{2} - \frac{\epsilon_x - \epsilon_y}{2} \cos 2\alpha - \frac{\gamma_{xy}}{2} \sin 2\alpha$$

$$\gamma_{nt} = (\epsilon_y - \epsilon_x) \sin 2\alpha + \gamma_{xy} \cos 2\alpha$$

where  $\alpha = 22.5^\circ$

Therefore, we can get

$$\epsilon_n = 0.001$$

$$\epsilon_t = -0.001$$

$$\gamma_{nt} = 0.002$$

**2-10**