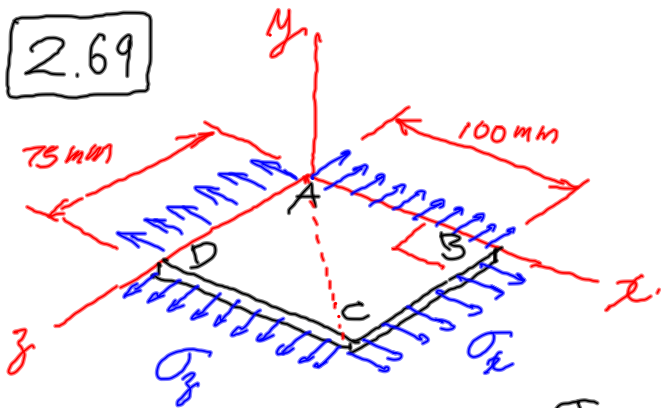


2.69



$$\sigma_x = 120 \text{ MPa}, \sigma_z = 160 \text{ MPa}$$

$$E = 87 \text{ GPa}, \nu = 0.34$$

$$\delta_{AB} = ? \quad \delta_{BC} = ? \quad \delta_{AC} = ?$$

$$(N) \quad (m) \quad (Pa = \frac{N}{m^2})$$

$$\sigma_x = 120 \times 10^6 \text{ Pa}$$

$$\sigma_y = 0$$

$$\sigma_z = 160 \times 10^6 \text{ Pa}$$

$$E = 87 \times 10^9 \text{ Pa}$$

$$\nu = 0.34$$

$$\epsilon_x = \frac{\sigma_x}{E} - \frac{\nu}{E} (\sigma_y + \sigma_z) = \square$$

$$\epsilon_y = \frac{\sigma_y}{E} - \frac{\nu}{E} (\sigma_z + \sigma_x) = \square$$

$$\epsilon_z = \frac{\sigma_z}{E} - \frac{\nu}{E} (\sigma_x + \sigma_y) = \square$$

$$\delta_{AB} = \epsilon_x \overline{AB} = \epsilon_x (0.1) = \square$$

$$\delta_{BC} = \epsilon_z \overline{BC} = \epsilon_z (0.075) = \square$$

$$\delta_{AB} = \square \text{ m}$$

$$\delta_{BC} = \square \text{ m}$$

$$\delta_{AC} = \square \text{ m}$$

$$\overline{AB}^2 + \overline{BC}^2 = \overline{AC}^2$$

$$2 \overline{AB} \delta_{AB} + 2 \overline{BC} \delta_{BC} = 2 \overline{AC} \delta_{AC}$$

$$\therefore \delta_{AC} = \square \text{ m}$$

$$\left[ d(x^2) = 2x dx \quad \delta(x^2) = 2x \delta x \quad \delta(\overline{AB}^2) = 2 \overline{AB} \delta(\overline{AB}) = 2 \overline{AB} \delta_{AB} \right]$$