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$$\begin{aligned} A &= 1 \\ B &= 9 \\ C &= 0 \\ d &= 1 \\ e &= 7 \\ f &= 1 \\ G &= 6 \end{aligned}$$

$$\begin{aligned} 1) \quad E_x &= 26 \times 10^6 \\ E_y &= -11 \times 10^6 \\ E &= 170 \times 10^9 \text{ N/m}^2 \\ V &= 0.28 \end{aligned}$$

$$\sigma_x = \frac{E}{1-V} (E_x + V E_y) = \frac{170 \times 10^9 \text{ N/m}^2}{1-0.28} (26 \times 10^6 + 0.28 \times -11 \times 10^6) = -474$$

$$\begin{aligned} \sigma_y &= \frac{E}{1-V} (E_y + V E_x) = \frac{170 \times 10^9}{1-0.28} (-11 \times 10^6 + 0.28 \times 26 \times 10^6) \\ \sigma_y &= -678 \end{aligned}$$

$$\begin{aligned} 1i \quad \sigma_x &= 81 \times 10^6 \text{ N/m}^2 \\ \sigma_y &= 46 \times 10^6 \text{ N/m}^2 \end{aligned}$$

$$E_x \frac{1}{E} (\sigma_x - V \sigma_y) = \frac{1}{170 \times 10^9} (81 \times 10^6 - 0.28 \times 46 \times 10^6 \text{ N/m}^2) = 4.60 \times 10^{-4}$$

$$E_y \frac{1}{E} (\sigma_y - V \sigma_x) = \frac{1}{170 \times 10^9} (46 \times 10^6 - 0.28 \times 81 \times 10^6) = 1.37 \times 10^{-4}$$

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$$MPA = 1.71$$

$$x = 107$$

$$y = 201$$

$$r_{xy} = 125$$

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$$\sigma_1 = (\sigma_x + \sigma_y) + \sqrt{(\sigma_x - \sigma_y)^2 + 4\tau_{xy}^2} \div 2$$

$$\sigma_1 = \frac{(107 + 201)}{2} + \sqrt{\frac{(107 - 201)^2}{4} + 4(125)^2} \div 2 = 314.5 \text{ psi}$$

$$\sigma_2 = (\sigma_x + \sigma_y) - \sqrt{(\sigma_x - \sigma_y)^2 + 4\tau_{xy}^2} \div 2$$

$$\sigma_2 = \frac{(107 + 201)}{2} - \sqrt{\frac{(107 - 201)^2}{4} + 4(125)^2} \div 2 = -6.47$$

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$$\tau_{max} = \sqrt{(\sigma_x - \sigma_y)^2 + 4\tau_{xy}^2} \div 2 = \frac{\sigma_1 - \sigma_2}{2}$$

$$\sqrt{\frac{(107 - 201)^2}{4} + 4(125)^2} \div 2 = 133.5$$

$$\tau_{min} = -\sqrt{\frac{(\sigma_x - \sigma_y)^2 + 4\tau_{xy}^2}{4}} = -\frac{\sigma_1 - \sigma_2}{2} = -133.5$$

$$\sqrt{\frac{(107 - 201)^2}{4} + 4(125)^2} \div 2$$

Take 133.5 max

max

$\tau_{max} = 133.5$

$\sigma_1 \text{ max} = 10 + \text{MPa}$

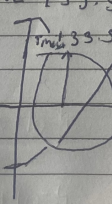
$\tau_{max} = 132 \text{ MPa}$

$\sigma_2 \text{ min} = -6.47 \text{ MPa}$

$\sigma_1 \text{ max} = 314.5 \text{ psi}$

$\sigma_2 \text{ min} = 201$

$\tau_{max} = 125$



③

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$$R_A = 1969.4 \text{ N}$$

$$R_B = 2580.6 \text{ N}$$

$$i) \frac{EI}{dx^2} = \frac{1969.4(x) - 450(x-0.5)^2 + 450(x-1.5)^2}{2} - \frac{300(x-1.5)^2 - 2300(x-1.5) + 800(x-2.5)^2}{2}$$

$$ii) \frac{EI}{dx} = \frac{1969.4(x)^2 - 450(x-0.5)^3 + 450(x-1.5)^3}{6} - \frac{800(x-1.5)^3 - 2300(x-1.5)^2 + 800(x-2.5)^3}{6}$$

iii)

(x)

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$$D = 280 =$$

$$L = 600$$

$$T_{max} = 150 \times 10^6 \text{ mpa}$$

$$n_L = 3.1 = 0.51$$

$$n_D = 66 = 0.66$$

$$O_c = \frac{pa}{26n_L}$$

$$C = \frac{0.026n_L}{D}$$

$$P = \frac{150 \times 10^6 \times 2 \times 14.7 \times 0.51}{2.8} = 8.2$$