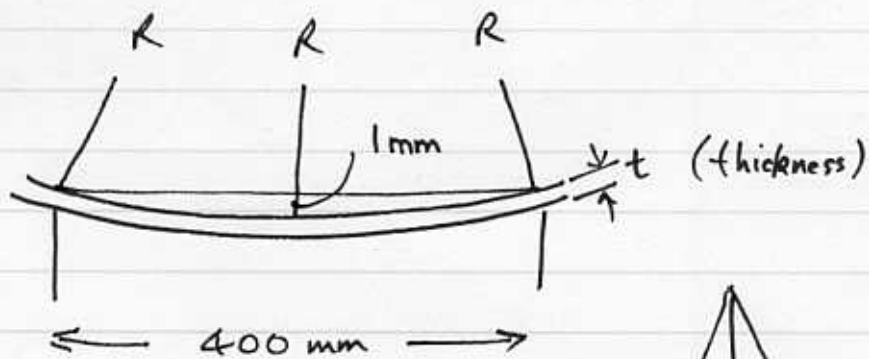
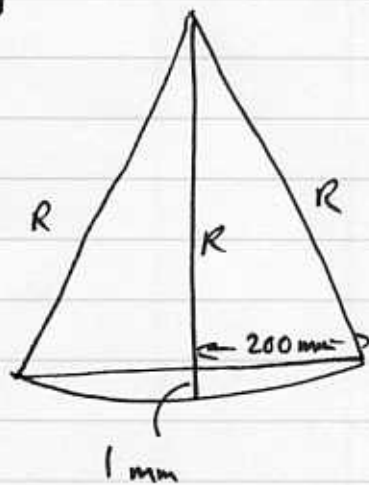


Qu. 4



For bending: $\frac{M}{I} = \frac{E}{R} = \frac{\sigma}{y}$

To find R :-



Use Pythagoras

$$\begin{aligned} R^2 &= (R-1)^2 + 200^2 \\ R^2 &= R^2 - 2R + 1 + 200^2 \\ 2R &= 200^2 + 1 \quad \therefore R = 20,000.5 \text{ mm} \\ &\text{or } R = \underline{20 \text{ m}} \end{aligned}$$

$$I = \frac{MR}{E} = \frac{64 \times 20}{16 \times 10^9} \text{ m}^4$$

but for a rectangular section $I = \frac{bd^3}{12}$

$$b = 0.120 \text{ m}$$

$$\therefore \frac{0.120 \times d^3}{12} = \frac{64 \times 20}{16 \times 10^9}$$

$$\text{whence } d = 0.025 \text{ m}$$

$$\text{or } \underline{\underline{25 \text{ mm}}}$$