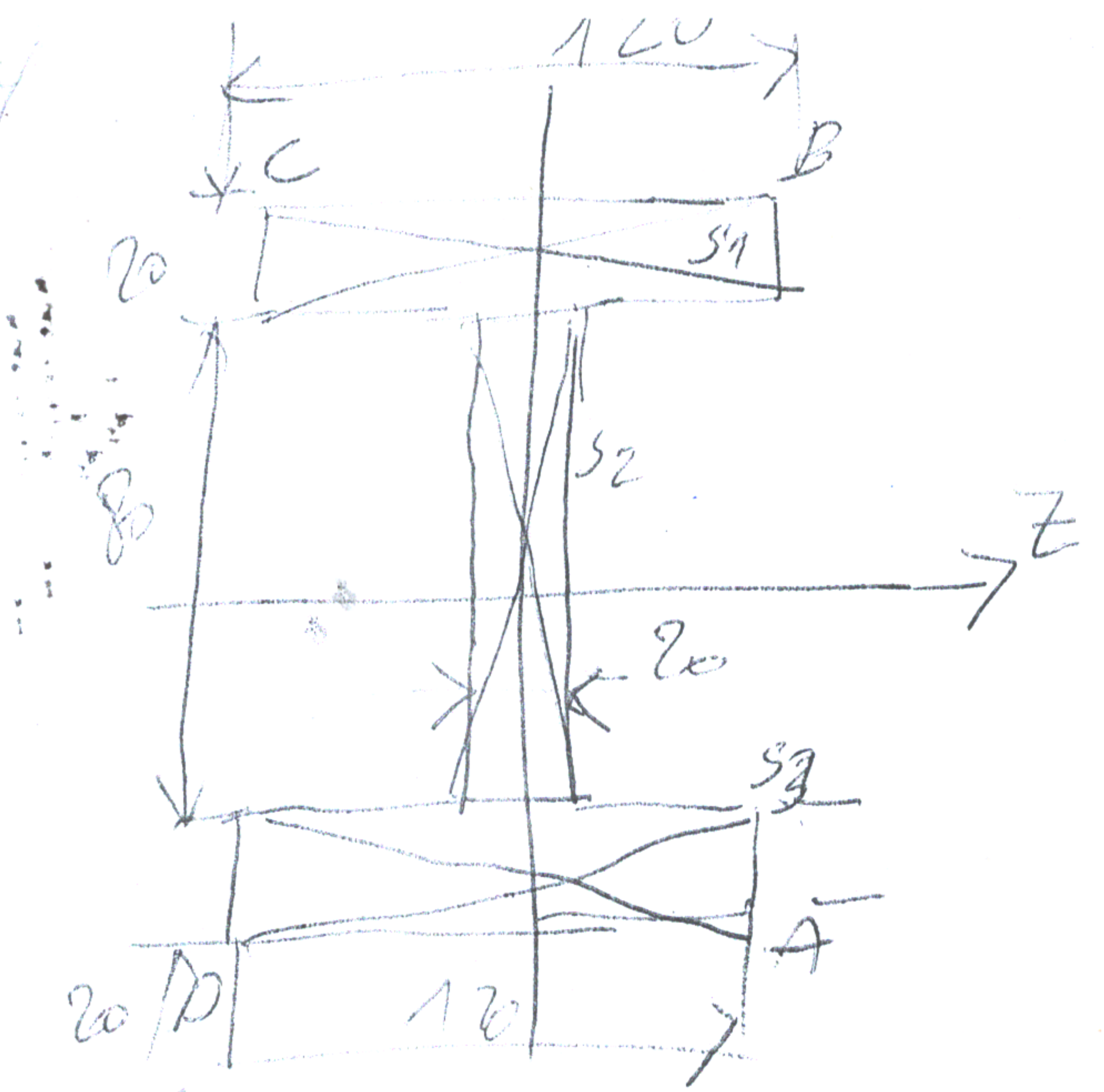


Ex 8 pt

La trapèze 24

	\bar{y}_i	$3\bar{y}_i$	S_i
1	50	0	$120 \times 20 = 2400 \text{ mm}^2$
2	0	0	$80 \times 20 = 1600 \text{ mm}^2$
3	-50	0	$120 \times 20 = 2400 \text{ mm}^2$
	0	0	6400 mm^2



$$I_{Gz} = I_{Gz(S1)} + I_{Gz(S2)} + I_{Gz(S3)} + 2400(-50)^2 = \frac{120^3 \times 20}{12} + 2400 \times (50)^2 + \frac{20 \times 80^3}{12} + \frac{120 \times 20^3}{12} + 2400(-50)^2 = 2(2880000 + 6000000) + 853333,33 = 18613333,33 \text{ mm}^4 = 1861,34 \text{ cm}^4$$

$$I_{Gy} = I_{Gy(S1)} + I_{Gy(S2)} + I_{Gy(S3)} = \frac{20^3 \times 120}{12} + 2400(0)^2 + \frac{20 \times 80^3}{12} + \frac{20^3 \times 120}{12} + 2400(0)^2 = 21333,33 \text{ mm}^4 = 21,34 \text{ cm}^4$$

$$I_{Gyz} = I_{Gyz(S1)} + I_{Gyz(S2)} + I_{Gyz(S3)} = 0 \text{ mm}^4$$

$$I_{\max/\min} = \frac{I_y + I_z}{2} \pm \sqrt{\left(\frac{I_y - I_z}{2}\right)^2 + I_{yz}^2} = \frac{1861,34 + 21,34}{2} \pm \sqrt{\left(\frac{1861,34 - 21,34}{2}\right)^2 + 0} = 941,34 \pm 920 = 1861,34 \text{ cm}^4$$

$$I_{\min} = 941,34 - 920 = 21,34 \text{ cm}^4$$

Les axes I_y et I_z sont des axes centraux principaux