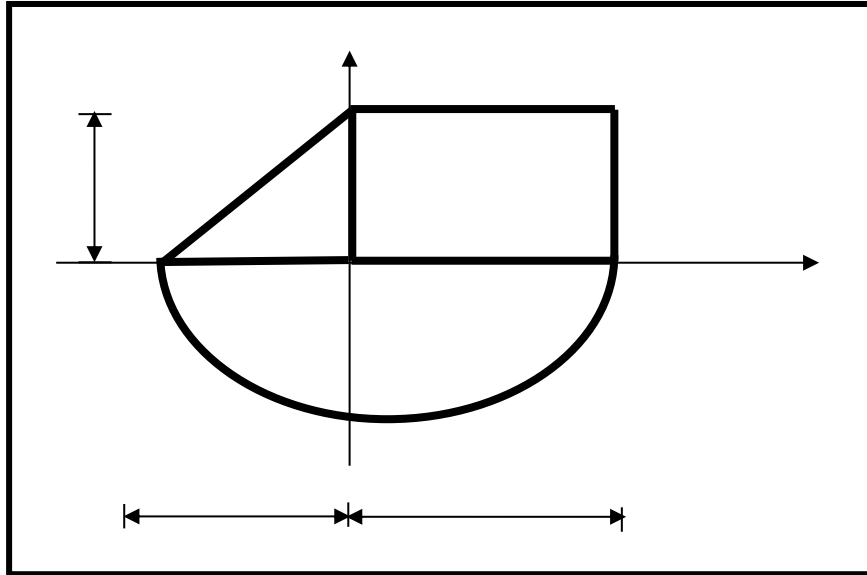
 1985 جامعة محمد بوضياف - المسيلة Université Mohamed Boudiaf - M'sila	Faculté de Technologie	Département de Génie Civil
	Durée : 1h30	Correction EMD RDM

Exercice

Calculez les moments d'inertie I_{x_G}, I_{y_G} de l'ensemble.



Solution :


(8pts)

Forme	A_i [m ²]	x_i [m]	y_i [m]	$A_i \cdot x_i$ [m ³]	$A_i \cdot y_i$ [m ³]
I	8	2	1	16	8
II	3	-1	0.66	-3	2
III	19.24	0.5	-1.48	9.62	-28.58
	$\Sigma A_i = 30.24$			$\Sigma A_i \cdot x_i = 22.62$	$\Sigma A_i \cdot y_i = -18.58$

$$x_G = 0.748 \text{ [m] } \mathbf{1pt}, \quad y_G = -0.614 \text{ [m] } \mathbf{1pt}$$

$$\text{Forme I} \begin{cases} I_x = 10.667 \text{ [m}^4\text{]} & \mathbf{1pt} \\ I_y = 42.667 \text{ [m}^4\text{]} & \mathbf{1pt} \end{cases}$$

$$\text{Forme II} \begin{cases} I_x = 2 \text{ [m}^4\text{]} & \mathbf{1pt} \\ I_y = 4.5 \text{ [m}^4\text{]} & \mathbf{1pt} \end{cases}$$

 1985 جامعة محمد بوضياف - المسيلة Université Mohamed Boudiaf - M'sila	Faculté de Technologie	Département de Génie Civil
	Durée : 1h30	Correction EMD RDM

$$Forme III \begin{cases} I_x = 58.929 [m^4] & \mathbf{1.5pts} \\ I_y = 63.739 [m^4] & \mathbf{1.5pts} \end{cases}$$

$$I_x = 71.60 [m^4]$$

$$I_y = 110.90 [m^4]$$

$$I_{xG} = 60.20 [m^4] \quad \mathbf{1.5pts}$$

$$I_{yG} = 93.98 [m^4] \quad \mathbf{1.5pts}$$