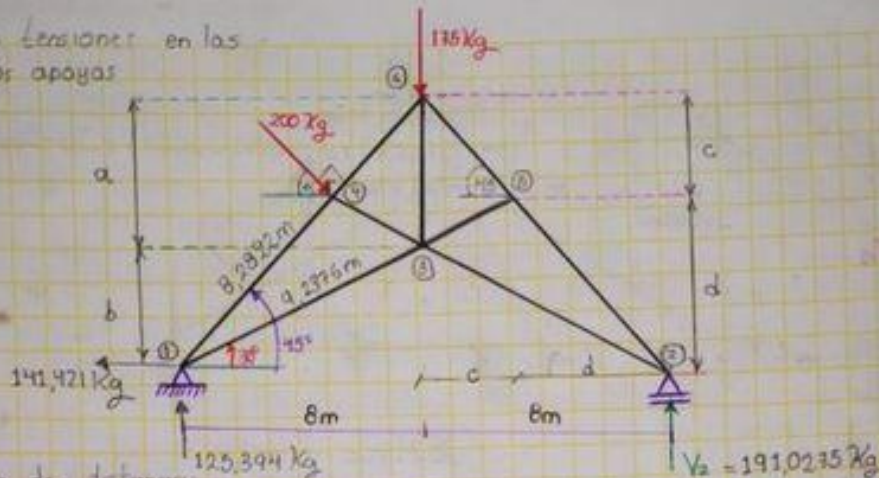


hallar las tensiones en las barras de los apoyos

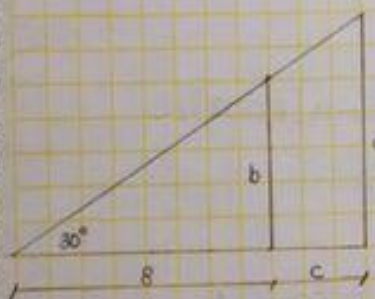


1- Cálculo de distancias

$$\begin{aligned} \text{Tag } 30 &= \frac{b}{8} \quad \therefore b = 8 \text{Tag } 30 \\ &= 4,6188 \text{ m} // \\ \text{Tag } 45 &= \frac{a+b}{8} \quad \therefore a = 8 \text{Tag } 45 - 4,6188 \\ &= 3,812 \text{ m} // \end{aligned}$$

$$c+d = a+b$$

$$\textcircled{1} \quad c+d = 8 \text{ m} \Rightarrow c = 8-d$$



$$\frac{d}{8+c} = \frac{8 \text{Tag } 30}{8}$$

$$8d = 8 \text{Tag } 30 (8+c)$$

$$8d = 64 \text{Tag } 30 + 8c \text{Tag } 30$$

$$8d = 64 \text{Tag } 30 + 8(8-d) \text{Tag } 30$$

$$d = 5,8564$$

$$c = 8 - 5,8564$$

$$c = 2,1436 //$$

2 Reacciones

$$\sum M \textcircled{0} = 0 \quad \curvearrowright \oplus$$

$$200(8,2822) + 175(8) - V_2(16) = 0$$

$$V_2 = 191,0275$$

$$\sum F_v = 0 \quad \uparrow \oplus$$

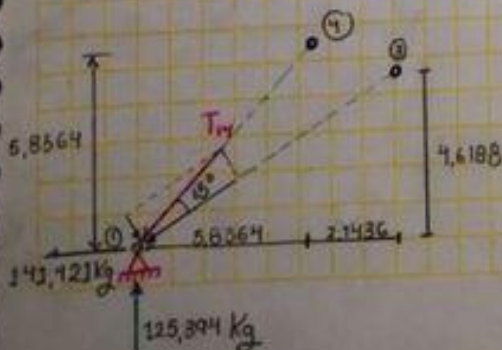
$$V_1 - 200 \text{ Sen } 45 - 175 + 191,0275 = 0$$

$$V_1 = 125,3938 \text{ Kg}$$

$$\sum F_h = 0 \quad \rightarrow \oplus$$

$$H_1 = 200 \text{ Cos } 45 = 141,421 \text{ Kg}$$

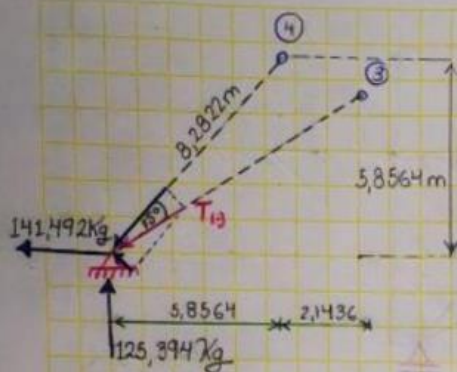
3- Tensiones



$$\sum M \textcircled{3} = 0 \quad \curvearrowright \oplus$$

$$125,394(8) + 141,421(4,6188) - T_{14} \text{ Sen } 16 \cdot (9,2376) = 0$$

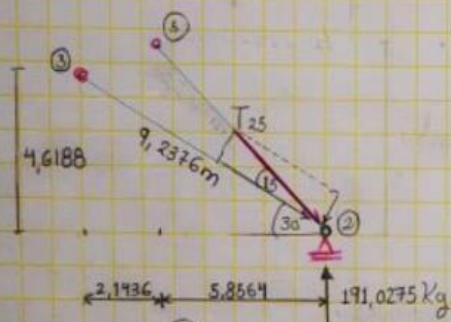
$$T_{14} = 692,781 \text{ Kg}$$



$$\sum M_{\textcircled{3}} = 0 \quad (\curvearrowright \textcircled{3})$$

$$125,394(5,8564) + 141,492(5,8564) + T_{13} \cdot \text{Sen } 15(8,2822) = 0$$

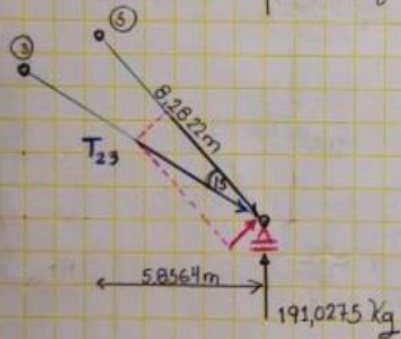
$$T_{13} = -729,146 \text{ Kg}$$



$$\sum M_{\textcircled{2}} = 0 \quad (\curvearrowright \textcircled{4})$$

$$-191,0275(8) + T_{25} \text{ Sen } 15(9,2376) = 0$$

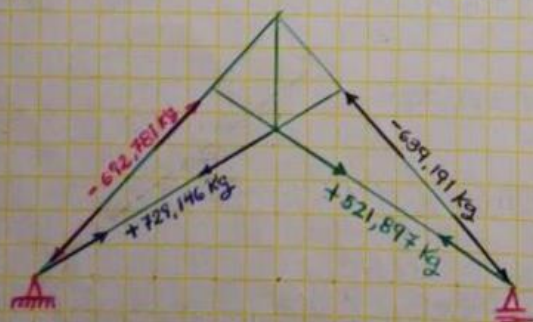
$$T_{25} = 639,191 \text{ Kg}$$



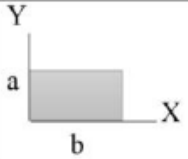
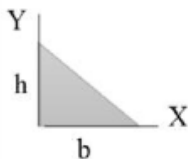
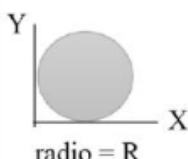
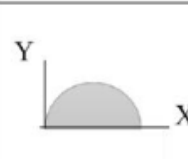
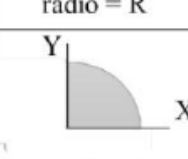
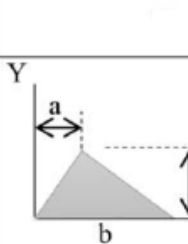
$$\sum M_{\textcircled{3}} = 0 \quad (\curvearrowright \textcircled{4})$$

$$-191,0275(5,8564) - T_{23} \text{ Sen } 15(8,2822) = 0$$

$$T_{23} = -521,897 \text{ Kg}$$



CENTROIDE Y MOMENTO DE INERCIA DE FIGURAS GEOMETRICAS

Figura	\bar{X}	\bar{Y}	Area	I_{xc}	I_{yc}	I_x	I_y
	$\frac{b}{2}$	$\frac{a}{2}$	ab	$\frac{ba^3}{12}$	$\frac{ab^3}{12}$	$\frac{ba^3}{3}$	$\frac{ab^3}{3}$
	$\frac{b}{3}$	$\frac{h}{3}$	$\frac{bh}{2}$	$\frac{bh^3}{36}$	$\frac{hb^3}{36}$	$\frac{bh^3}{12}$	$\frac{hb^3}{12}$
	R	R	πR^2	$\frac{\pi R^4}{4}$	$\frac{\pi R^4}{4}$	$\frac{5\pi R^4}{4}$	$\frac{5\pi R^4}{4}$
	$\frac{R}{2}$	$\frac{4R}{3\pi}$	$\frac{\pi R^2}{2}$	$0.1098 R^4$	$\frac{\pi R^4}{8}$	$\frac{\pi R^4}{8}$	$\frac{5\pi R^4}{8}$
	$\frac{4R}{3\pi}$	$\frac{4R}{3\pi}$	$\frac{\pi R^2}{4}$	$0.0549 R^4$	$0.0549 R^4$	$\frac{\pi R^4}{16}$	$\frac{\pi R^4}{16}$
	$\frac{a+b}{3}$	$\frac{h}{3}$	$\frac{bh}{2}$	$\frac{bh^3}{36}$	$\frac{bh(a^2 - ab + b^2)}{36}$	$\frac{bh^3}{12}$	$\frac{bh(a^2 + ab + b^2)}{12}$

Leyenda

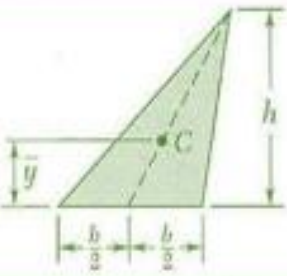
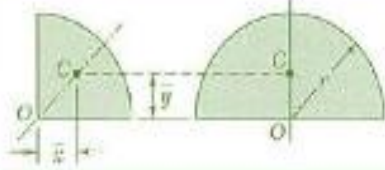
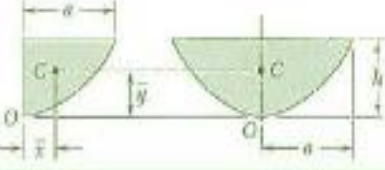
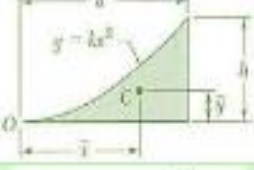

I_{xc} = momento de inercia respecto al centroide del eje X (horizontal)

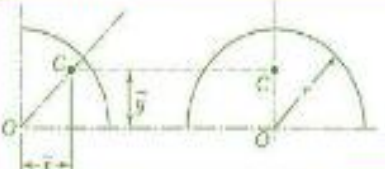
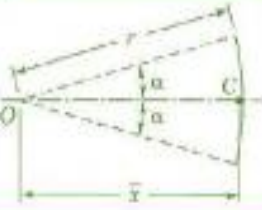
I_{yc} = momento de inercia respecto al centroide del eje Y (vertical)

I_x = momento de inercia respecto al eje X

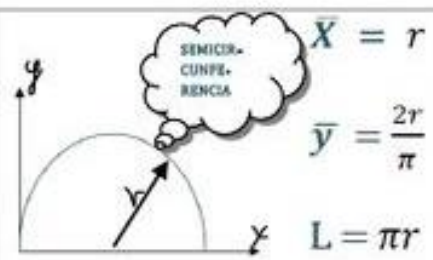
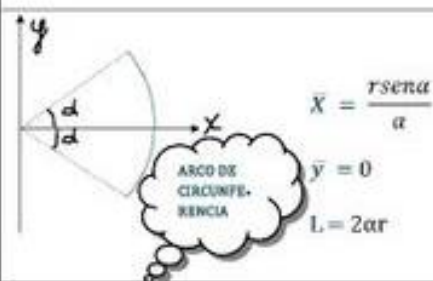
I_y = momento de inercia respecto al eje Y

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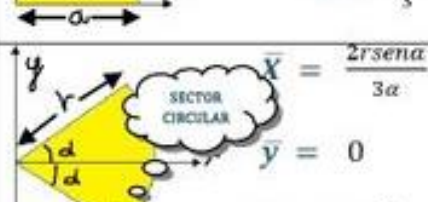
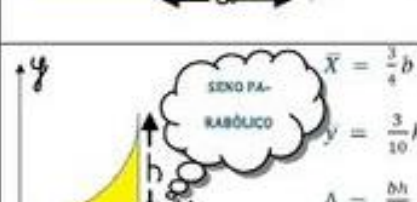
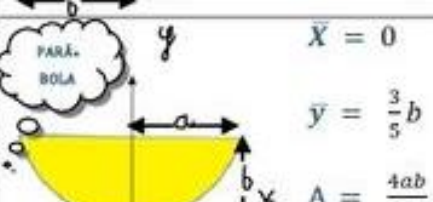
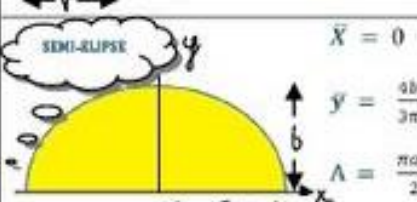
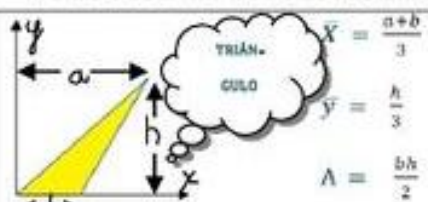
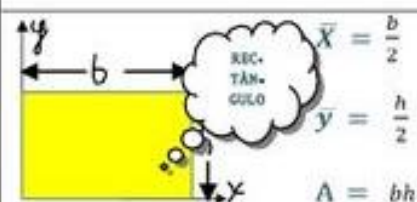
FORMA (ÁREAS)		x	y	ÁREA
ÁREA TRIANGULAR		$\left(\frac{1}{3}(a+b)\right)$	$\frac{h}{3}$	$\frac{bh}{2}$
UN CUARTO DE ÁREA CIRCULAR		$\frac{4r}{3\pi}$	$\frac{4r}{3\pi}$	$\frac{\pi r^2}{4}$
ÁREA SEMICIRCULAR		0	$\frac{4r}{3\pi}$	$\frac{\pi r^2}{2}$
ÁREA SEMIPARABÓLICA		$\frac{3a}{8}$	$\frac{3h}{5}$	$\frac{2ah}{3}$
ÁREA PARABÓLICA		0	$\frac{3h}{5}$	$\frac{4ah}{3}$
TÍMPANO PARABÓLICO		$\frac{3a}{4}$	$\frac{3h}{10}$	$\frac{ah}{3}$
SECTOR CIRCULAR		$\frac{2r \operatorname{sen} \alpha}{3\alpha}$	0	αr^2

FORMA (LÍNEAS)		x	y	ÁREA
UN CUARTO DE ARCO CIRCULAR		$\frac{2r}{\pi}$	$\frac{2r}{\pi}$	$\frac{\pi r}{2}$
ARCO SEMICIRCULAR		0	$\frac{2r}{\pi}$	πr
ARCO DE UN CÍRCULO		$\frac{r \operatorname{sen} \alpha}{\alpha}$	0	$2\alpha r$

CENTROIDES DE LÍNEA



CENTROIDES DE ÁREA



CENTROIDES DE VOLUMEN

