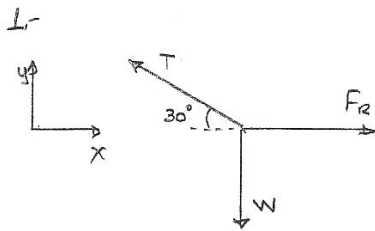


Solución: Primer Examen Final Colegiado Estática

2015-1

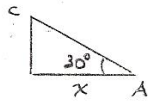


$$\sum F_x = F_2 - \frac{\sqrt{3}}{2} T = 0 \Rightarrow F_2 = \frac{\sqrt{3}}{2} T$$

$$\sum F_y = \frac{1}{2} T - W = 0 \Rightarrow T = 156.96 \text{ N}$$

$$F_2 = 135.93 \text{ N} \text{ como } F_2 = k \delta$$

$$\delta = 0.45 \text{ m} ; l = 0.40 ; l + \delta = 0.85 \text{ m}$$



$$x = 2 - 0.85 \text{ m}$$

$$x = 1.15 \text{ m}$$

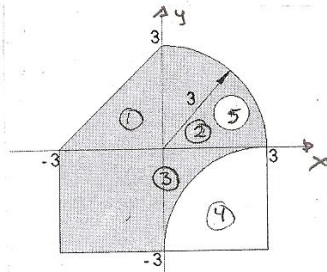
2.-

$$12\sqrt{3} F \cos 30^\circ - 2F \sin 30^\circ = 680$$

$$F \left[\frac{2(3)}{2} - 2\left(\frac{1}{2}\right) \right] = 680$$

$$F = 40 \text{ N}$$

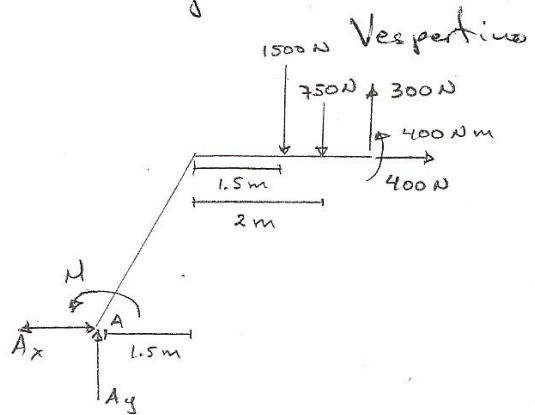
3.-



	\bar{x}_i [cm]	\bar{y}_i [cm]	A_i [cm ²]	$\bar{x}_i A_i$ [cm ³]	$\bar{y}_i A_i$ [cm ³]
①	-1	1	$\frac{9}{2}$	$-\frac{9}{2}$	$\frac{9}{2}$
②	$\frac{4}{\pi}$	$\frac{4}{\pi}$	$\frac{9\pi}{4}$	9	9
③	0	$-\frac{3}{2}$	18	0	-27
④	$3 - \frac{4}{\pi}$	$-3 + \frac{4}{\pi}$	$-\frac{9\pi}{4}$	$-\frac{27\pi}{4} + 9$	$\frac{27\pi}{4} - 9$
⑤	2	1	$-\frac{9}{16}\pi$	$-\frac{9}{8}\pi$	$-\frac{9}{16}\pi$
Σ			20.73	-11.24	-3.06

$$\bar{x} = -0.54 \text{ cm} \quad \bar{y} = -0.14 \text{ cm}$$

4.-



$$\sum F_x = -A_x + 400 = 0 \Rightarrow A_x = 400 \text{ N}$$

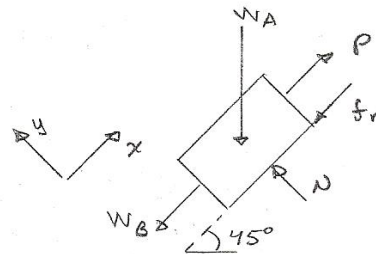
$$\sum F_y = A_y - 1950 = 0 \Rightarrow A_y = 1950 \text{ N}$$

$$A = 1990.60 \text{ N}$$

$$\sum M_A = -3(1500) - 3.5(750) + 4.5(300) - 2(400) + 400 + M_A = 0$$

$$M_A = 6415 \text{ N}\cdot\text{m}$$

5.-



$$\sum F_x = P - \frac{1}{\sqrt{2}} W_A - W_B - f_r = 0$$

$$\sum F_y = N - \frac{1}{\sqrt{2}} W_A = 0$$

$$\Rightarrow P - \frac{1}{\sqrt{2}} W_A - W_B - \frac{1}{\sqrt{2}} \mu W_A = 0$$

$$W_B = 424.28 \text{ N}$$