TRABAJO PRACTICO N° 2
DETERMINACION DE LAS REACCIONES DE VINCULOS

Ejercicio N°1:

Determinar las reacciones de vinculo de la viga isostatica a partir de los siguientes datos:

P1 = 5KN
P2 = 10KN
P3 = 5KN
L = 10 m

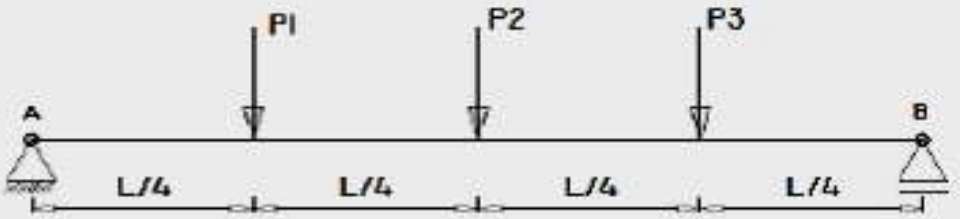
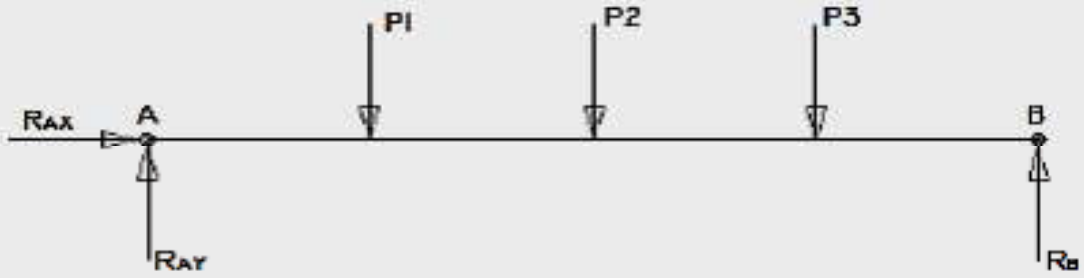


DIAGRAMA DE CUERPO LIBRE



$$\Sigma Fx = 0 \Rightarrow R_{Ax} = 0$$

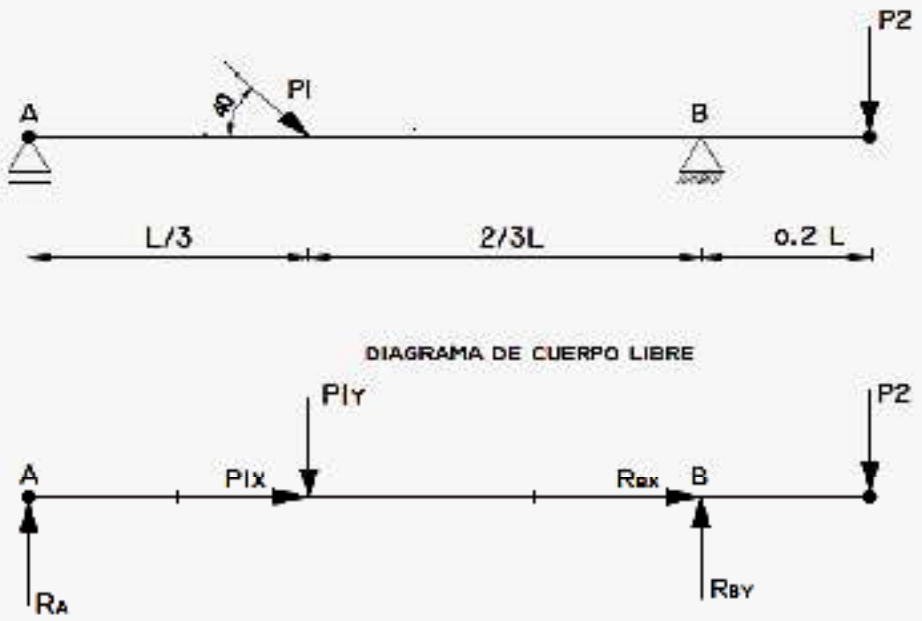
$$\Sigma M_A = 0$$
$$= (50 * 2.50)KNm + (10 * 5)KNm$$
$$+ (5 * 7.50)KNm - RB * 10m \Rightarrow RB = 10\ KN$$

$$\Sigma Fy = 0 = RAy - P1 - P2 - P3 + RB \Rightarrow Ray = 10\ KN$$

Ejercicio N°2:

Determinar las reacciones de vinculo de la viga isostatica a partir de los siguientes datos:

P1 = 10KN
P2 = 10KN
L = 10 m



$\Sigma x = 0 \Rightarrow P1\cos 40° + RBx \Rightarrow$ **RBx = -7.66 KN**

$\Sigma MA = 0 \Rightarrow P1 * sen40° * 3.33m - RBv * 10m + P2 * 12m \Rightarrow RBv = 14.14\ KN$

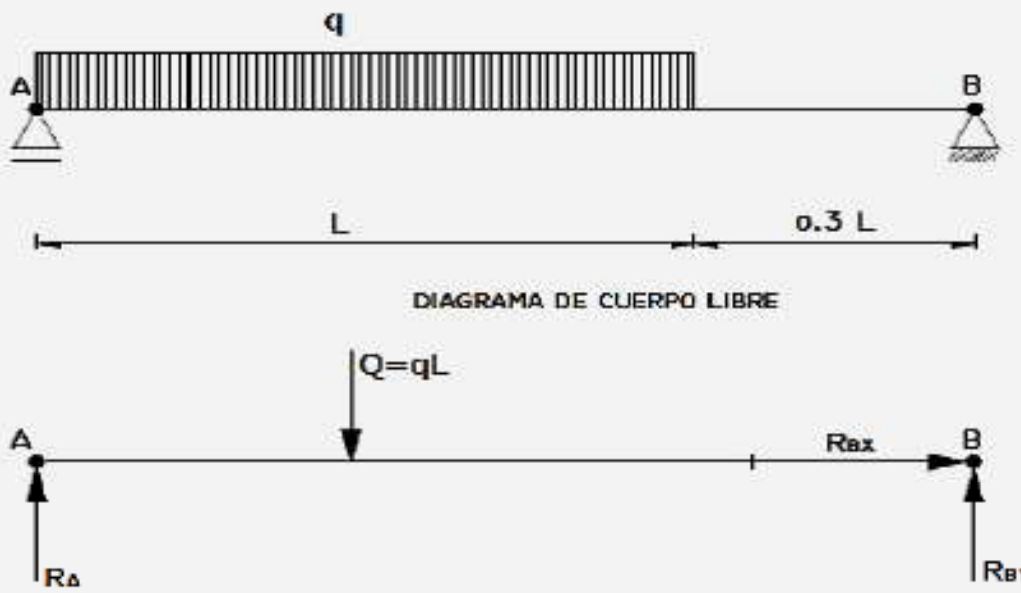
$\Sigma y = 0 \Rightarrow RA - P!y + RBy - P2 = 0 \Rightarrow RA = 2.30\ KN$

Verifiquen si $\Sigma Fy = 0$ (??)

Ejercicio N°3:

Determinar las reacciones de vinculo de la viga isostatica a partir de los siguientes datos:

q = 7KN
L = 10 m



$\Sigma Fx=0 \Rightarrow RBx = 0$

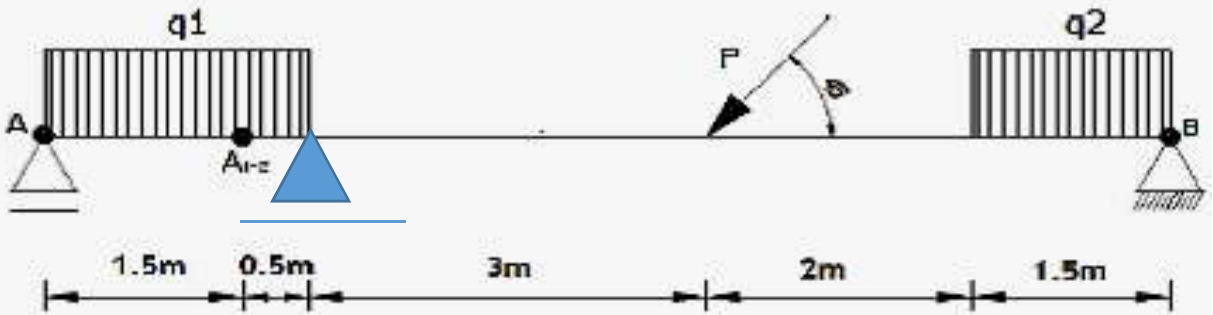
$$\Sigma MA = 0 \Rightarrow Q * \frac{L}{2} - RBy * 1.3L = \Rightarrow RBy = 26.92\ KN$$

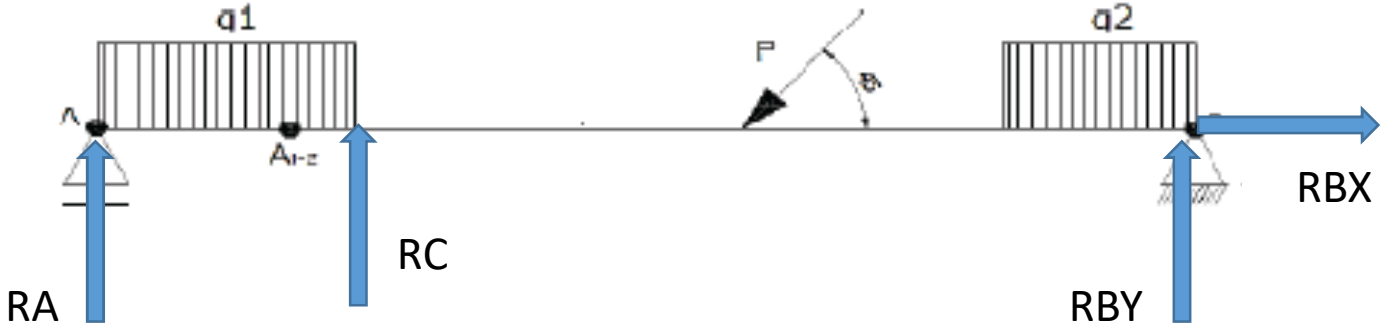
$\Sigma Fy = 0 \Rightarrow RA-Q+RBy=0 \Rightarrow RA = 43.08\ KN$

Verifiquen si $\Sigma MA = 0 \quad - \quad \Sigma MB = 0(??)$

4:

eterminar las reacciones de vinculo de la viga isostatica a partir de los siguientes





$Q1 = 10KN/m * 2m = 20KN$

$Q2 = \frac{15KN}{m} * 1.5m) = 22.5KN$

$\Sigma MA_{12@} = 0$

$= RA * 1.50m - 20KN * 0.75m$

$\Rightarrow RA = 7.50\ KN$

$\Sigma Fx = 0 = -30KN * cos30° +$

$\Rightarrow RBx = 21.21\ KN$

$= RA * 8.50m - 20KN * 7.50m + RC * 6.50m - 30KN\ sen\ 45° * 3.50m - 22.50KN * 0.75m \Rightarrow RC =$

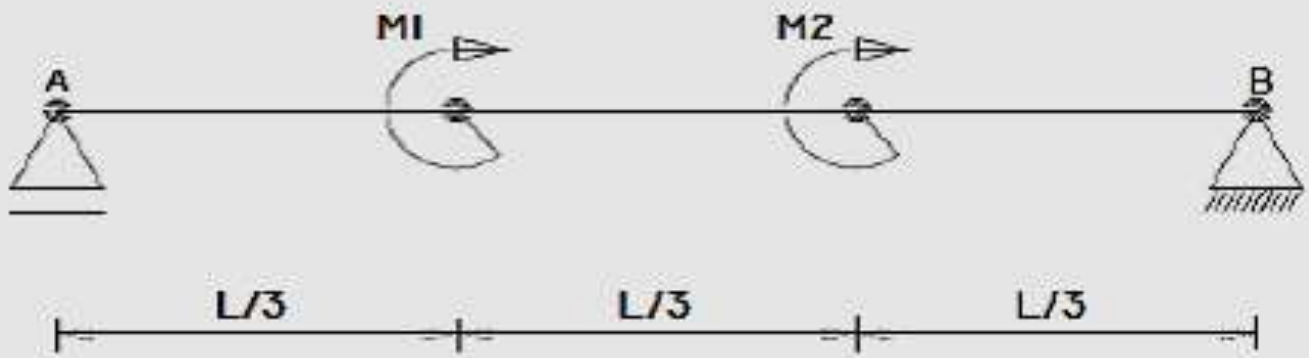
$= 0 \Rightarrow RA - 20KN - 30KN * sen\ 45° - 22.50KN + RBy + RC \Rightarrow RBy = 28.9\ KN$

Verifiquen si $\Sigma M A_{12} = 0$??

Ejercicio N°5:

Determinar las reacciones de vinculo de la viga isostatica a partir de los siguientes datos:

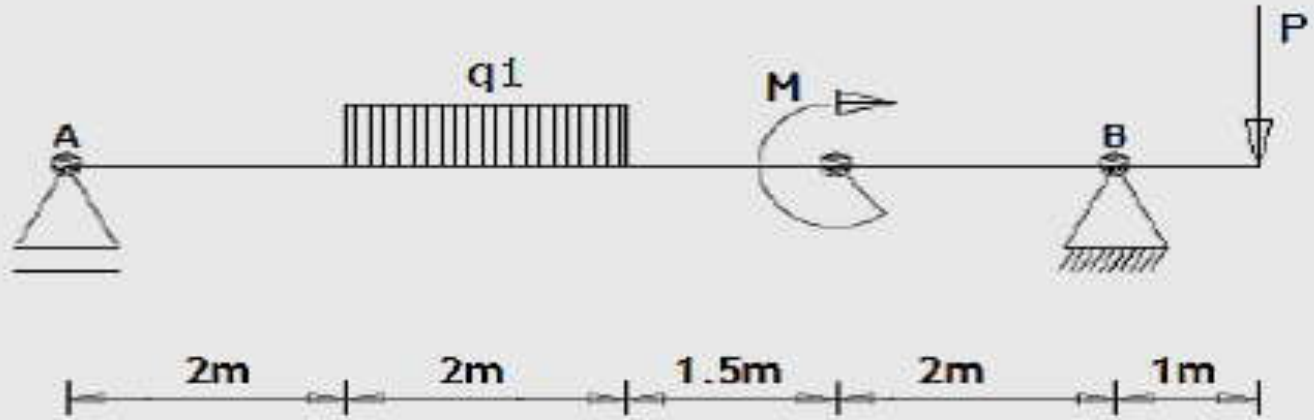
L = 9m
M1 = 40KN
M2 = 10KN



Ejercicio N°6:

Determinar las reacciones de vinculo de la viga isostatica a partir de los siguientes datos:

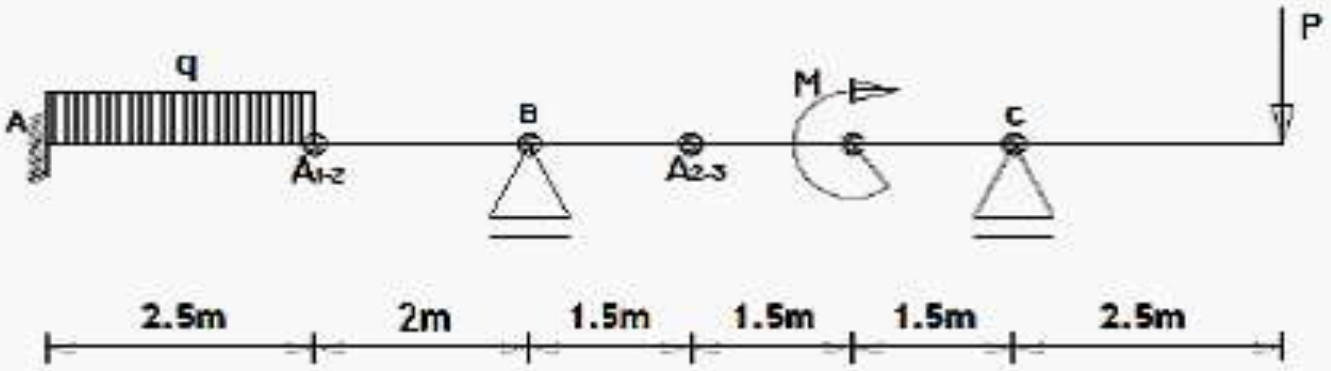
q = 15KN/m
M = 50KNm
P = 40KN



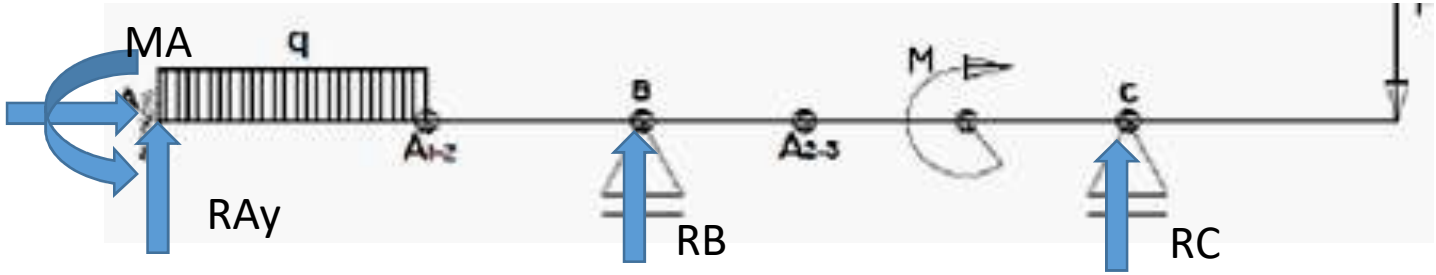
N°7:

Determinar las reacciones de vinculo de la viga isostatica a partir de los siguientes

m
m



x



$$Q = \frac{15KN}{m} * 2.50m = 3$$

$$\Sigma MA_{23(der)} = 0$$

$$50KN * 5.5m - RC * 3m +$$

$$\boldsymbol{RC = 105KN}$$

$$\Sigma MA_{12(der)} = 0$$

$$-RB * 2m + 40KNm - 10$$
$$* 6.50m + 50KN * 9m \Rightarrow$$

$$\boldsymbol{RB = -96.30\ KN}$$

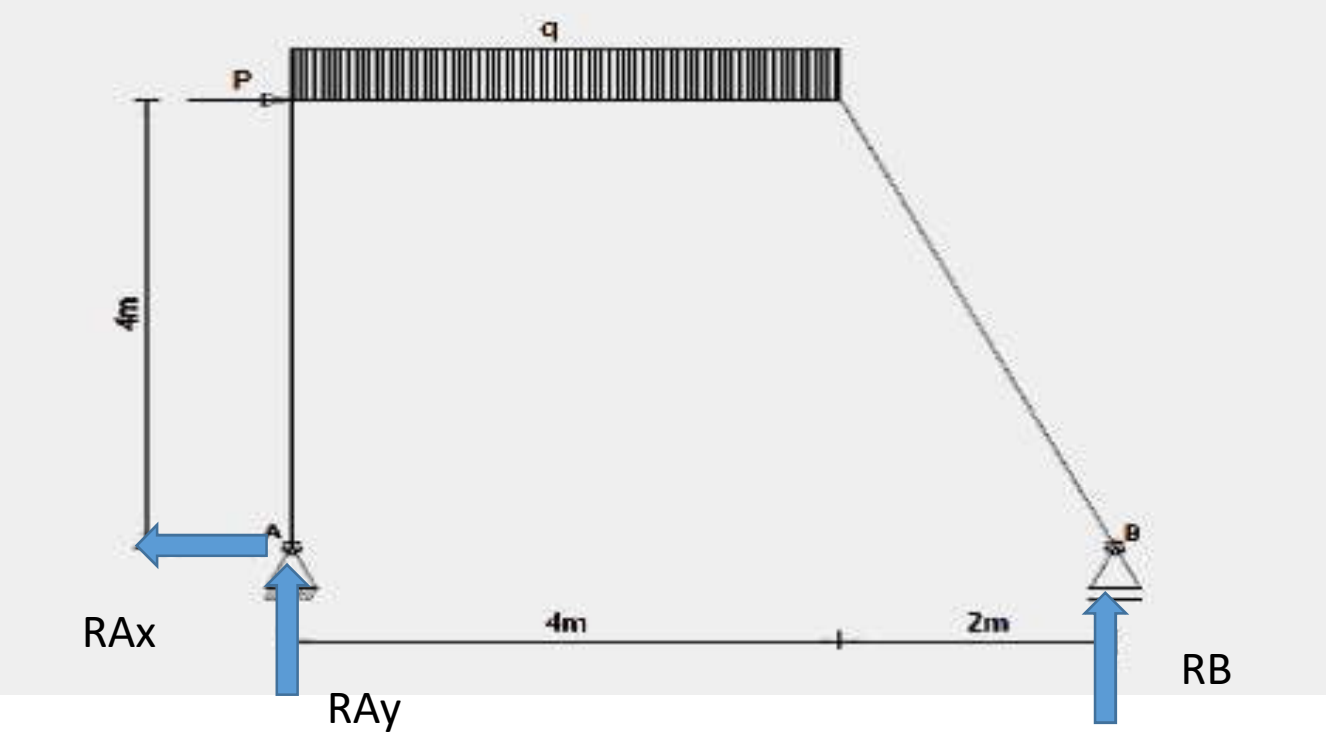
Ray -37.50KN - 37.50KN - 96.30KN + 105KN - 50KN => RAy = 78.70 KN

MA+37.50KN*1.25m+RB*4.50m + 40KNM-RC*9m + 50KN*11.50 m => MA = 150 KNm

Verifiquen si $\Sigma MA_{12} = 0$ — $\Sigma MA_{23} = 0$? ?

3:

eterminar las reacciones de vinculo del siguiente portico a partir de los siguientes



$$Q = \frac{30KN}{m} * 4m = 120\ KN$$

$$\Sigma FX = 0 \Rightarrow P - RAx \Rightarrow RAx = 40$$

$$\Sigma MA = 0$$
$$= P * 4m + Q * 2m - RBy * 6m \Rightarrow$$
$$= 66.70\ KN$$

$$\Sigma Fy = 0 \Rightarrow RAy - 120KN + RBy$$
$$\Rightarrow RAy = 53.30\ KN$$

Verifiquen si $\Sigma MB = 0$??

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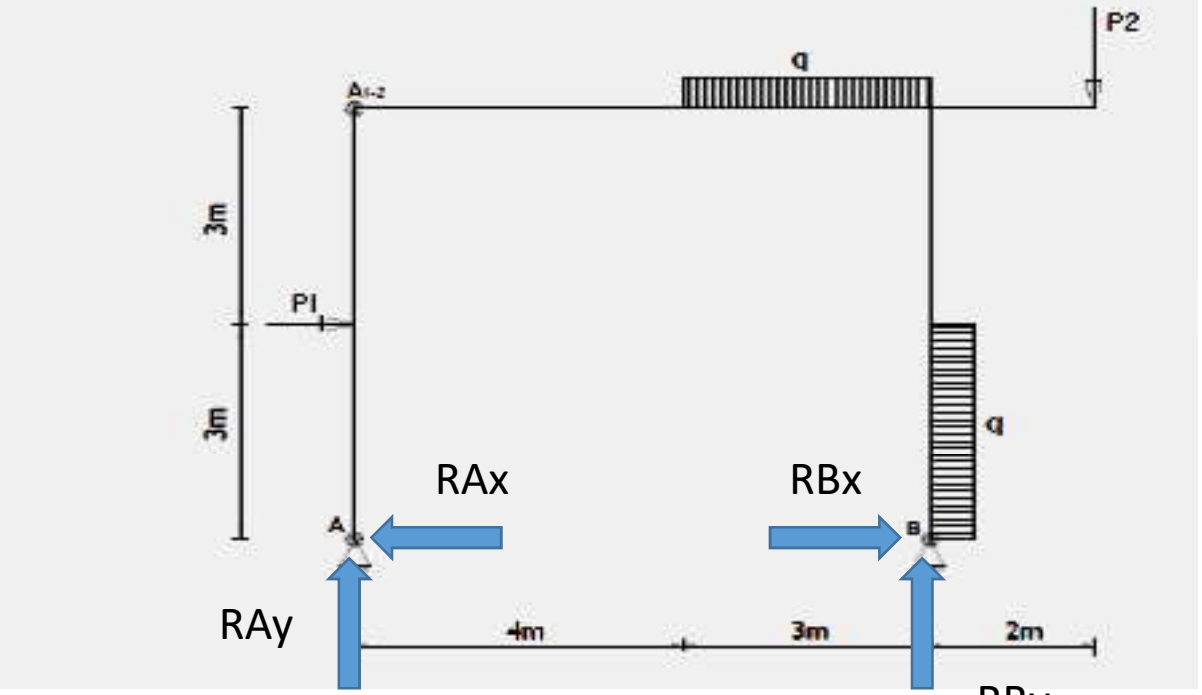
eterminar las reacciones de vinculo del portico a partir de los siguientes datos:



Q1= 30KN/m*3m = 90 KN

$$Q2 = \frac{30KN}{m} * 3m = 90KN$$

$$\Sigma M_A = 0$$

$$P1 * 3m + Q1 * 5.50m + P2 * 9m - Q2 * 1.50m - RBy * 7m \Rightarrow \boldsymbol{RBy = 120\ KN}$$

$$\Sigma Fy = 0 = RAy - Q1 - P2 + RBy \Rightarrow \boldsymbol{RAy =}$$

$$\Sigma MA_{12(der)} = Q1 * 5.50m + P2 * 9m + Q2 * 4.50m - \boldsymbol{I} * 7m + RBx * 6m \Rightarrow \boldsymbol{RBx = 70KN}$$

$$\Sigma Fx = 0 = P1 + RBx - RAx - Q2 \Rightarrow \boldsymbol{RAx =}$$

Verifiquen si $\Sigma MB = 0$??

GRUPO DE TRABAJO DEBERA COMPLETAR EL PRACTIC