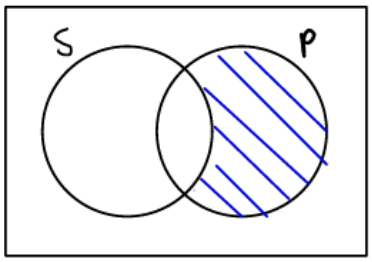
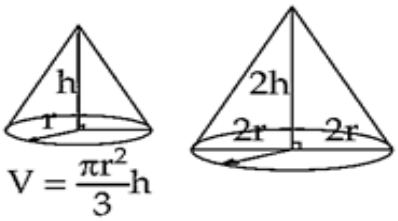
SOLUCIÓN



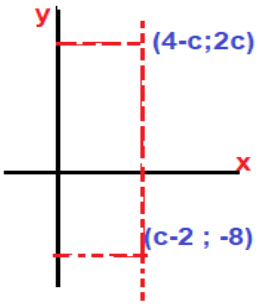
I) V

II) V

III) V



$V = \frac{\pi r^2}{3} h$



SOLUCIÓN

$M = \overset{\circ}{8} + 3 = \overset{\circ}{8} - 5$

$M = 11 - 5$

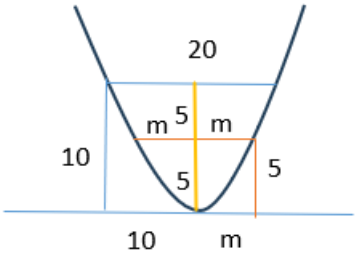
$M = \overset{\circ}{mcm}(8,11) - 5$

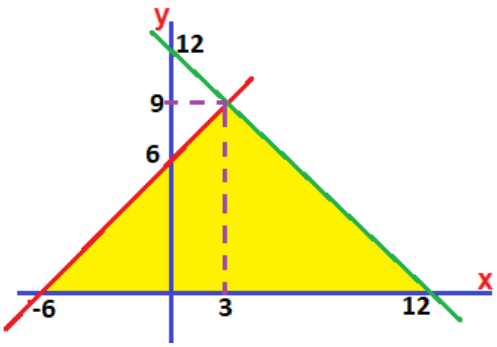
$= \overset{\circ}{88} - 5$

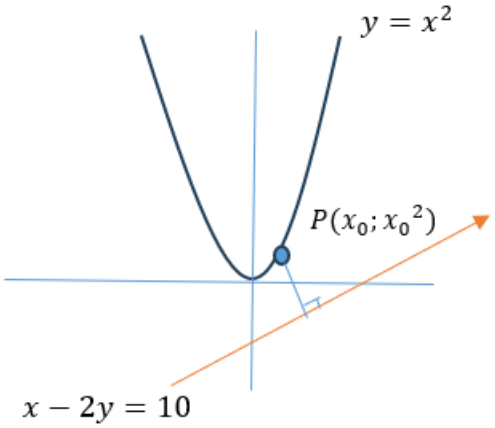
$500 < 88K - 5 < 600$

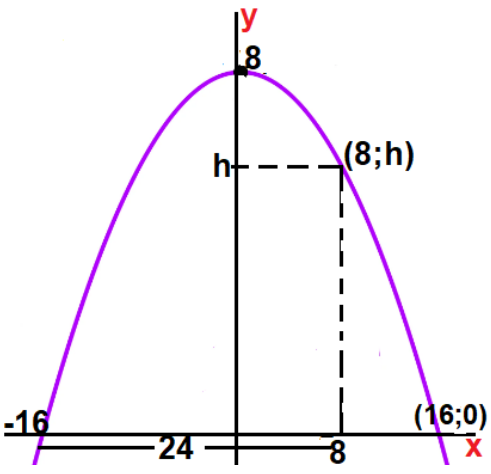
$5,\ldots < K < 6,\ldots \Rightarrow K = 6 \quad M = 88(6) - 5$

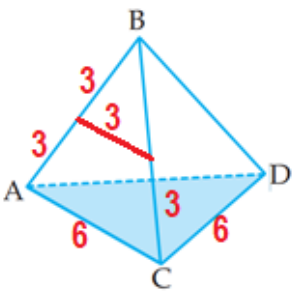
$M = 523$

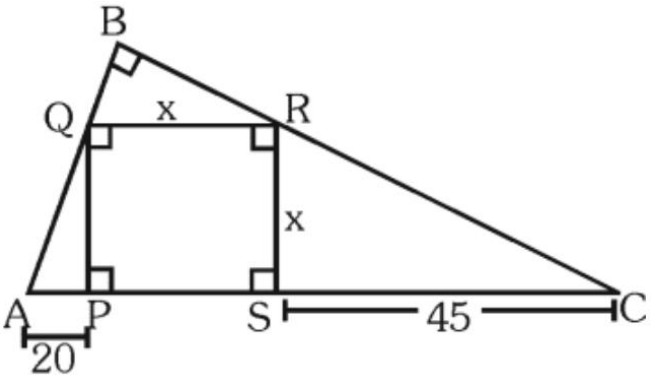


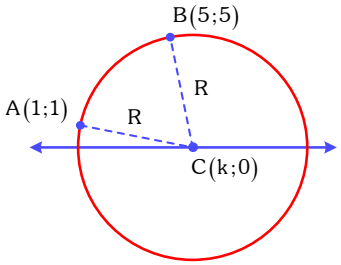


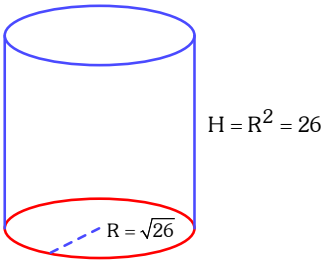


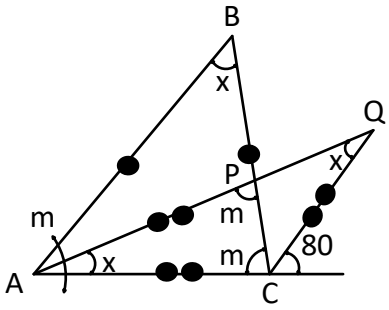


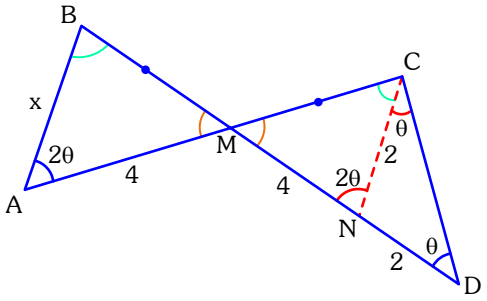


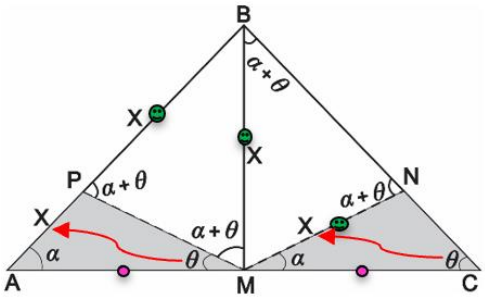

B
Q
x
R
x
A
P
S
45
C
20

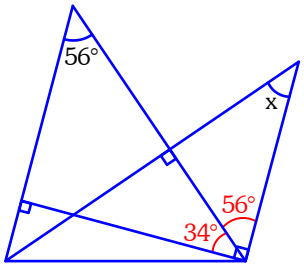

B(5;5)
R
A(1;1)
R
C(k;0)

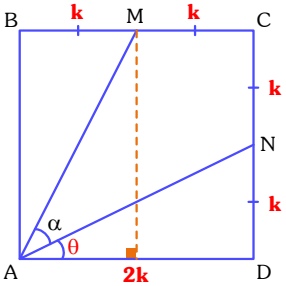

H = R² = 26
R = √26

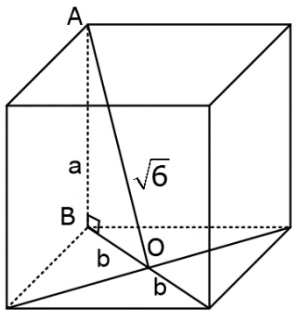

B
x
Q
P
x
m
m
m
80
A
x
C

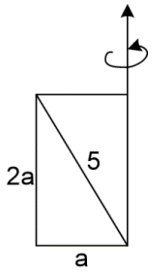

B
C
x
θ
M
2θ
2
4
4
2θ
N
θ
2
A
D

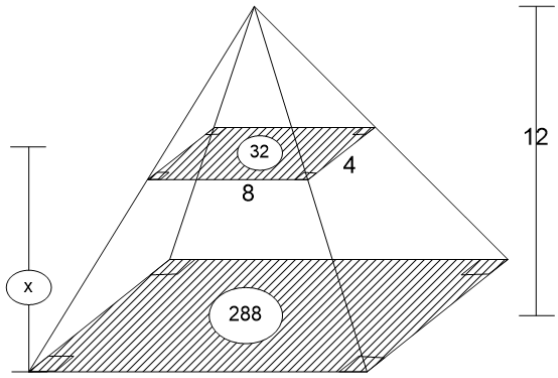

B
α+θ
X
X
P
α+θ
N
α+θ
X
X
α+θ
α
θ
α
θ
A
M
C

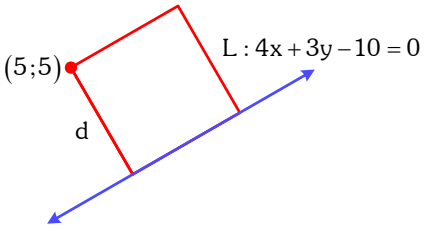

56°
x
56°
34°

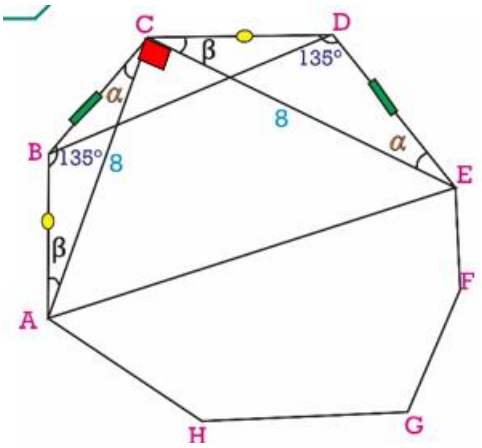

B
k
M
k
C
k
N
k
α
θ
A
2k
D


A
a
√6
B
O
b
b









Resolución:

Aplicando el principio de homogeneidad

$$[V] = [\alpha]\,[P] = [\beta]\,[Q]$$

Determinando $[\alpha]$:

$$[V] = [\alpha]\,[P]$$

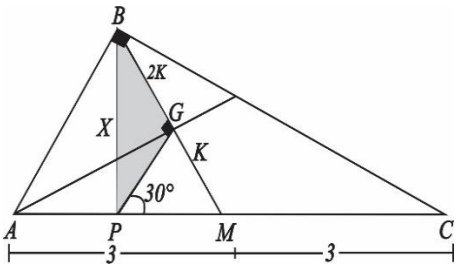
$$[\alpha] = \frac{[V]}{[P]} = \frac{L^3}{L^2} = L^3 \cdot L^{-2} \rightarrow [\alpha] = L$$

Determinando $[\beta]$:

$$[V] = [\beta]\,[Q]$$

$$[\beta] = \frac{[V]}{[Q]} = \frac{L^3}{ML^{-3}} = L^3 \cdot M^{-1}L^3 = M^{-1}L^6$$

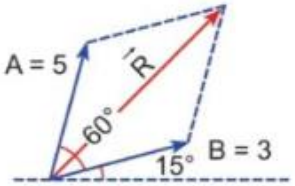
Rpta.: $[\alpha] = L$, $[\beta] = M^{-1}L^6$



Resolución:

Para determinar el ángulo entre los vectores, unimos el origen de los vectores.

Aplicamos el método del paralelogramo



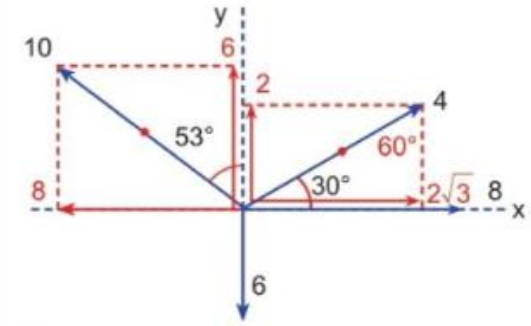
$$|\vec{R}| = \sqrt{5^2 + 3^2 + 2(5)(3)\cos 60°}$$

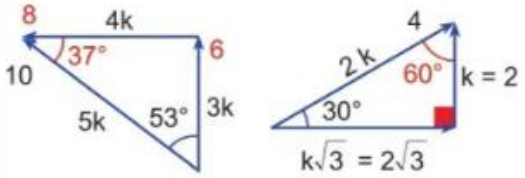
$$|\vec{R}| = \sqrt{25 + 9 + 30 \times \frac{1}{2}}$$

$$|\vec{R}| = \sqrt{49} = 7$$

Rpta.: $|\vec{R}| = 7$

• Descomponemos los vectores $\vec{A}$ y $\vec{B}$ aplicando los triángulos rectángulos notables de 30° y 53°.





• Determinamos el vector resultante en cada uno de los ejes x e y.

$\vec{R}_x = 8 + 2\sqrt{3} - 8 = 2\sqrt{3}$

$\vec{R}_y = 6 + 2 - 6 = 2$

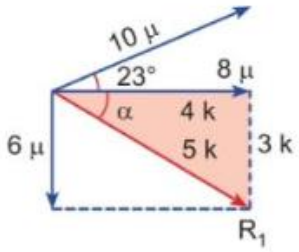
• Piden la dirección del vector resultante, entonces hallaremos el ángulo y para ello aplicaremos:

$$tg\theta = \frac{R_y}{R_x} = \frac{\cancel{2}}{\cancel{2}\sqrt{3}} \qquad tg\theta = \frac{1}{\sqrt{3}}$$

Rpta.: $\theta = 30°$

Resolución:

• Determinemos el vector resultante de los vectores perpendiculares.



Del triángulo sombreado

$4k = 8 \rightarrow k = 2$

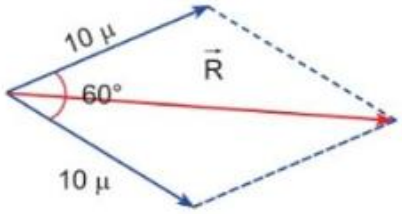
Además:

$R_1 = 5k = 5(2)$

$R_1 = 10\ \mu$

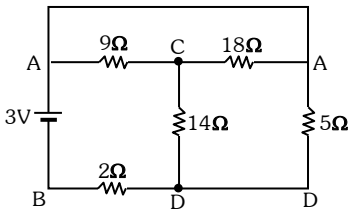
Tambien: $\alpha = 37°$

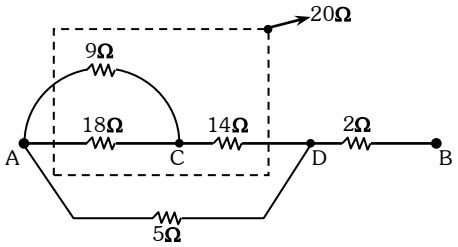
• Cuando los vectores tiene el mismo módulo y forman 60° se aplica:

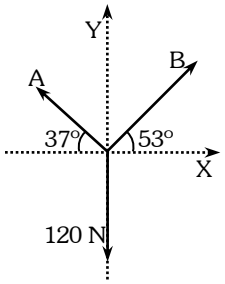


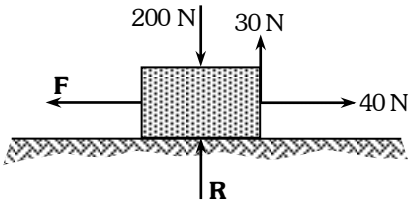
Rpta.: $|\vec{R}| = 10\sqrt{3}\ \mu$

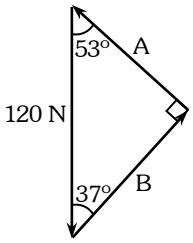


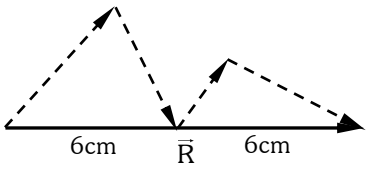


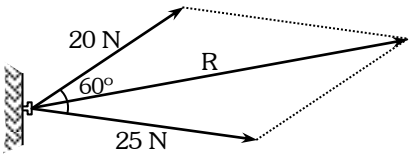


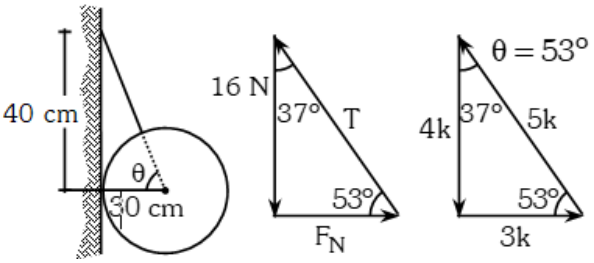

Y
A
B
37°
53°
X
120 N

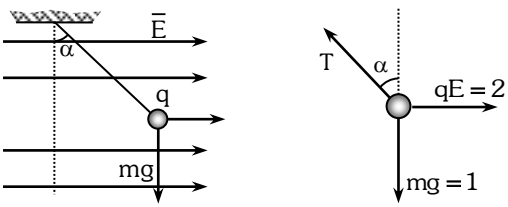

200 N
30 N
F
40 N
R


53°
A
120 N
37°
B


6cm
R
6cm


20 N
R
60°
25 N


40 cm
θ
30 cm
16 N
37°
T
53°
F_N
θ = 53°
4k
37°
5k
53°
3k


E
α
q
mg
T
α
qE = 2
mg = 1