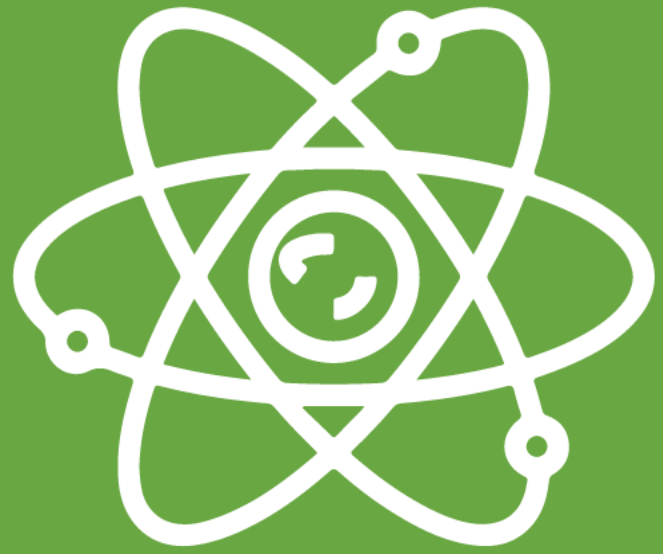
PHYSICS

VERANO 2021

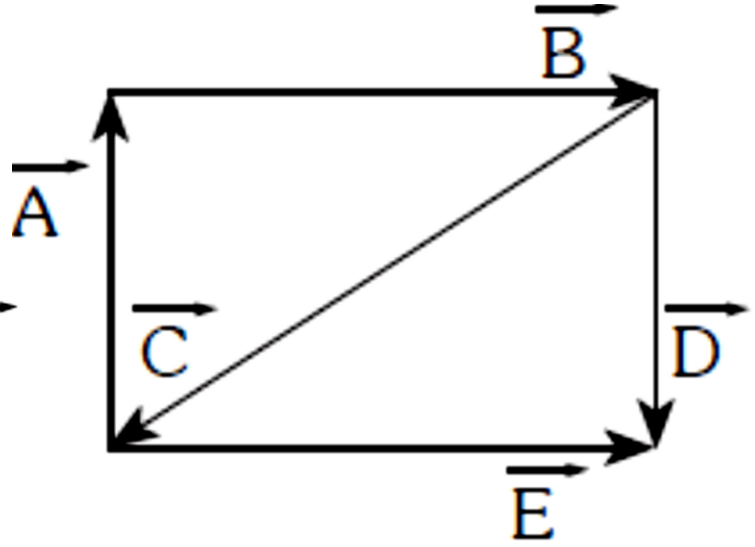
5th
SECONDARY



INTRODUCTORIO

SACO OLIVEROS

1.- En el rectángulo mostrado se colocan los siguientes vectores. Indique verdadero (V) o falso (F) según corresponda

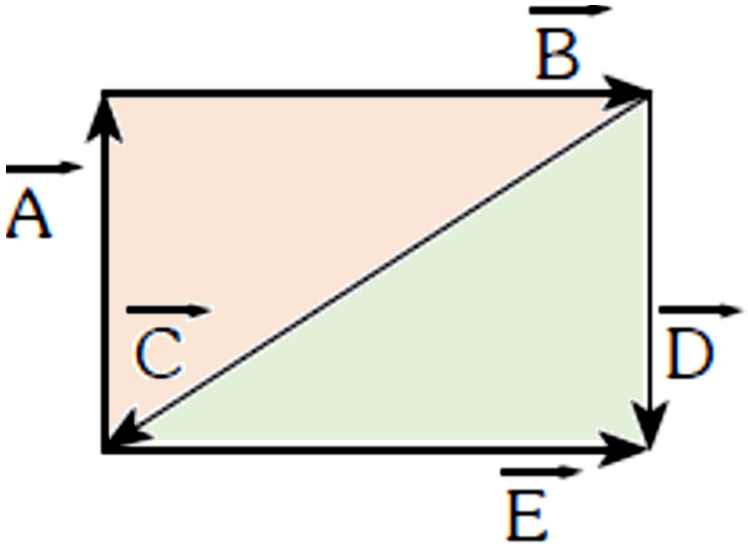


F I. $\vec{C} + \vec{D} = \vec{E}$

V II. $\vec{A} + \vec{B} + \vec{C} = \vec{0}$

V III. $\vec{E} + \vec{C} = \vec{D}$

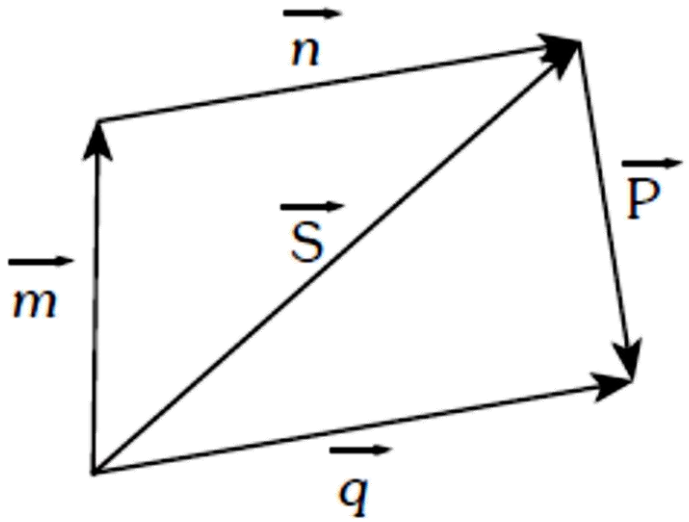
A) VVV
B) VFF
C) FVV
D) FVF



$$\vec{A} + \vec{B} + \vec{C} = \vec{0}$$

$$\vec{C} + \vec{E} = \vec{D}$$

2.-Del sistema de vectores mostrados, indique las proposiciones correctas.

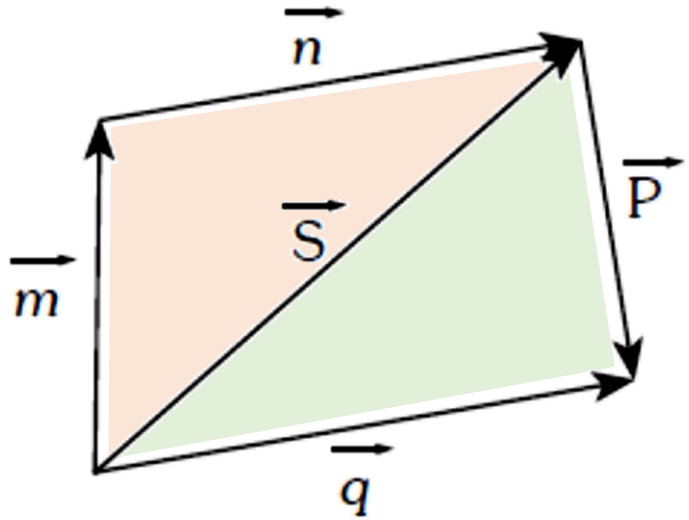


V I. $\vec{m} + \vec{n} + \vec{P} = \vec{q}$

V II. $\vec{n} = \vec{S} - \vec{m}$

F III. $\vec{S} + \vec{P} + \vec{q} = \vec{0}$

A) I y III
B) I y II
C) I, II y III
D) solo I

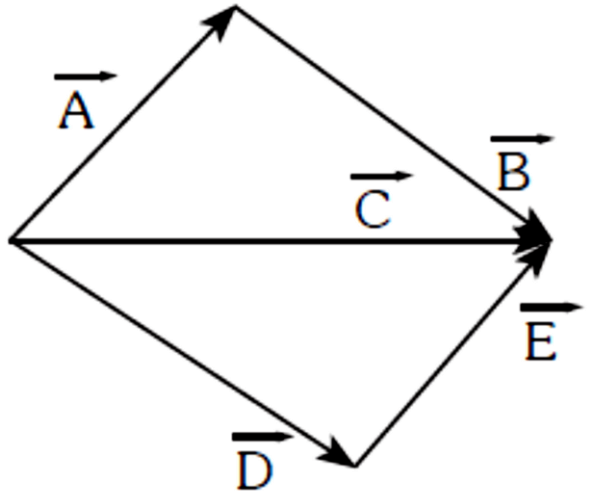


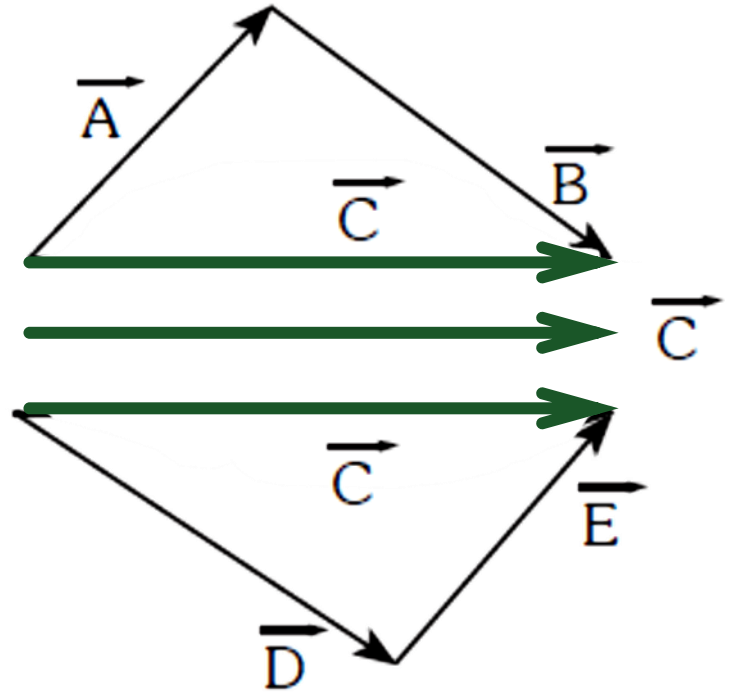
$$\vec{m} + \vec{n} = \vec{S}$$

$$\vec{S} + \vec{P} = \vec{q}$$

$$\vec{m} + \vec{n} + \vec{P} = \vec{q}$$

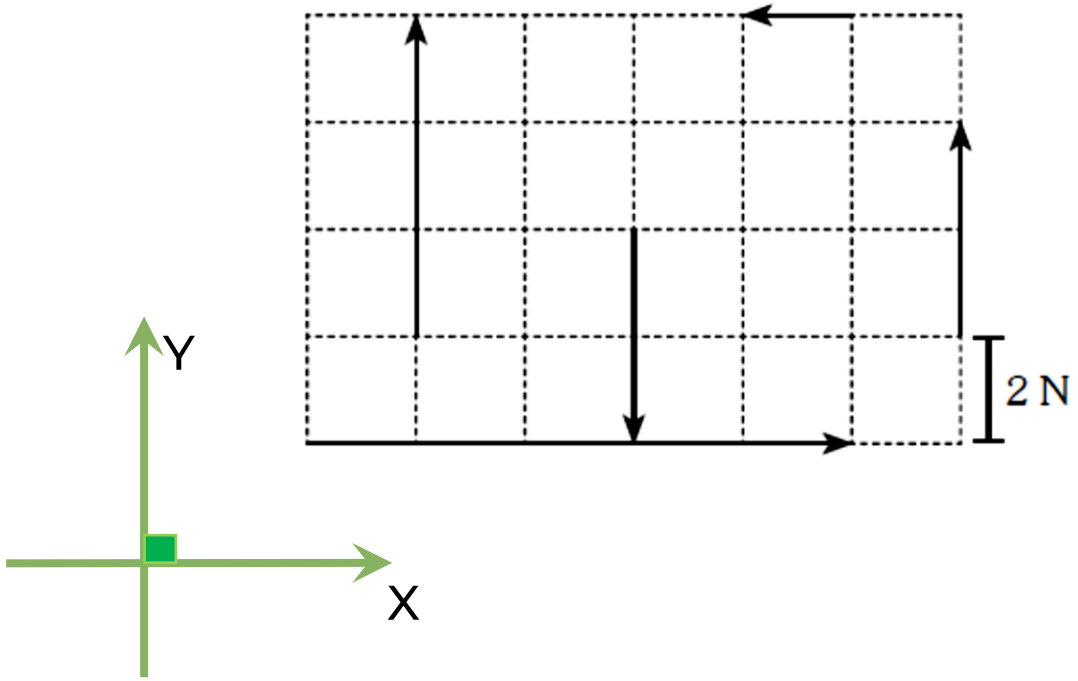
3.-Calcule la resultante de los vectores mostrados.





$$\vec{R} = 3\,\vec{C}$$

4.-A partir de la cuadrícula mostrada, determine el módulo del vector resultante.



EN EL EJE X

$\vec{R}_x = -2\hat{\imath} + 10\hat{\imath}$

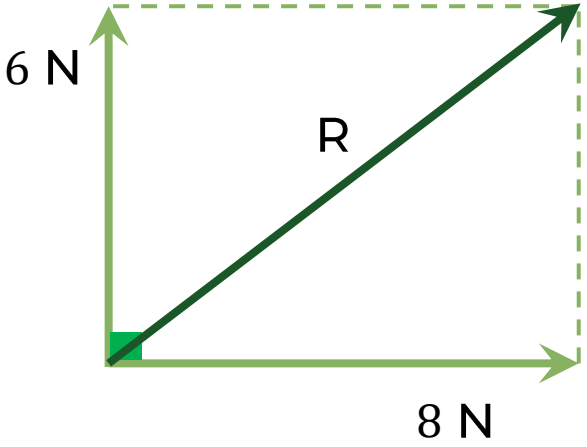
$\vec{R}_x = 8\hat{\imath}$

EN EL EJE y

$\vec{R}_y = 6\hat{\imath} + 4\hat{\imath} - 4\hat{\imath}$

$\vec{R}_y = 6\hat{\jmath}$

GRAFICANDO



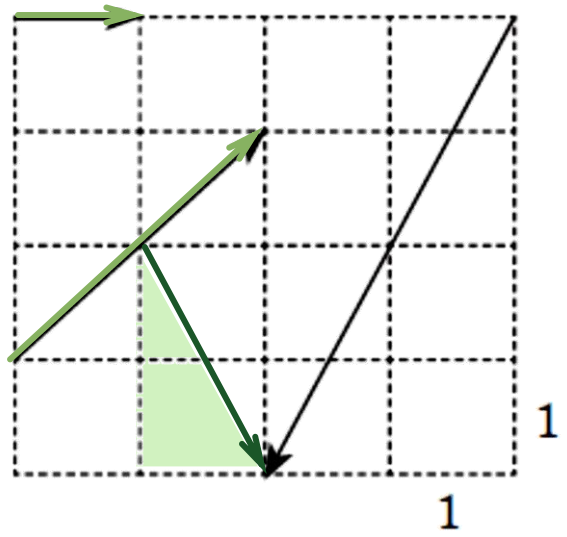
Calculo del R

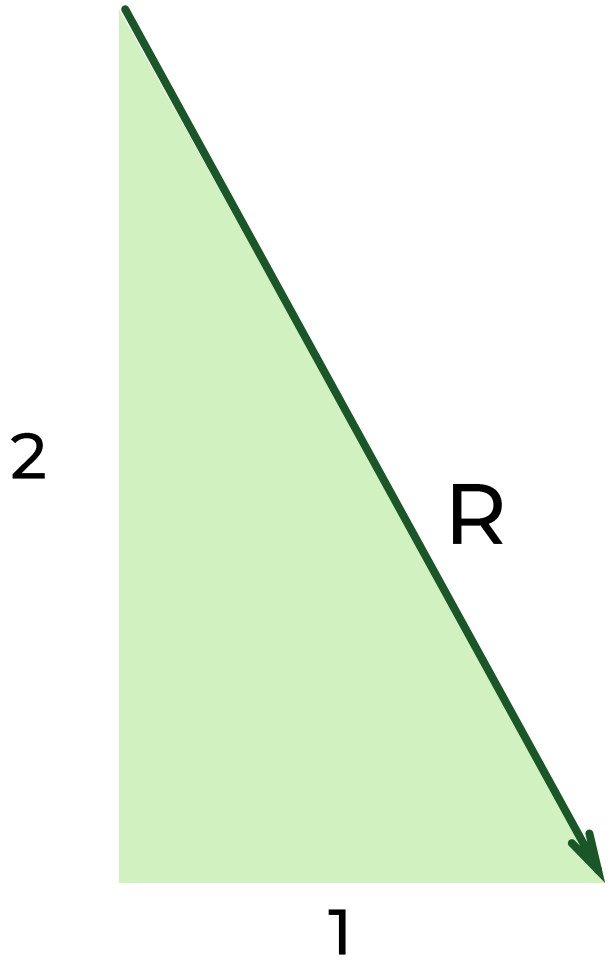
Pitágoras

$R = \sqrt{(6N)^2 + (8N)^2}$

$R = 10\ N$

5.-Calcule el módulo de la resultante a partir de los vectores mostrados.





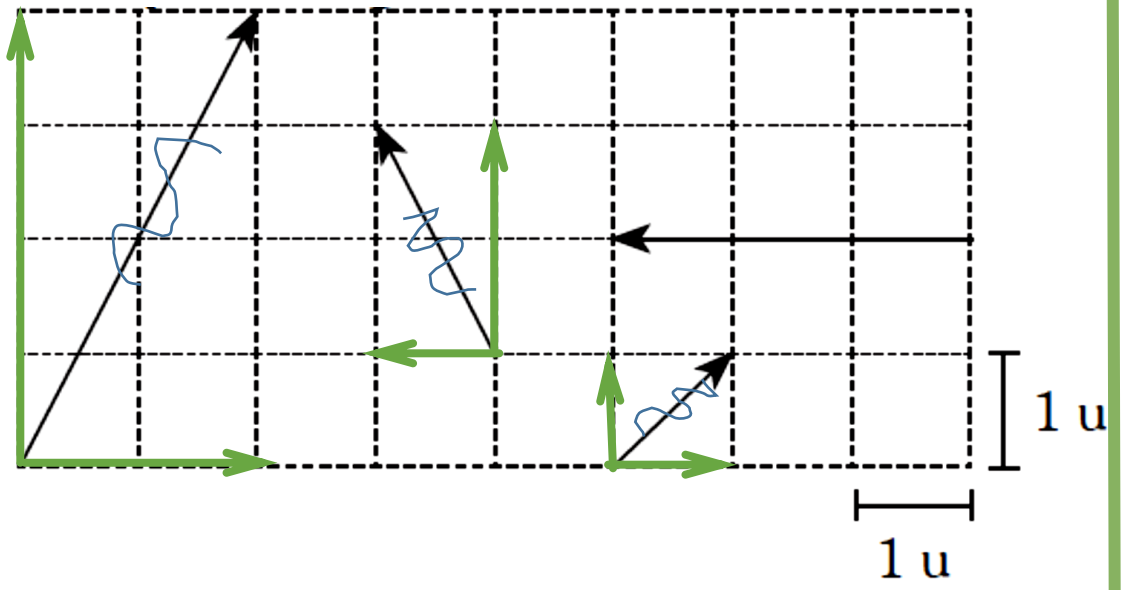
Calculo del R

Pitágoras

$$R = \sqrt{(2)^2+(1)^2}$$

$$R = \sqrt{5}$$

6.-Determine el módulo de la resultante a partir del gráfico mostrado.



EN EL EJE X

$\vec{R}_x = 2\hat{\imath} - 1\hat{\imath} + 1\hat{\imath} - 3\hat{\imath}$

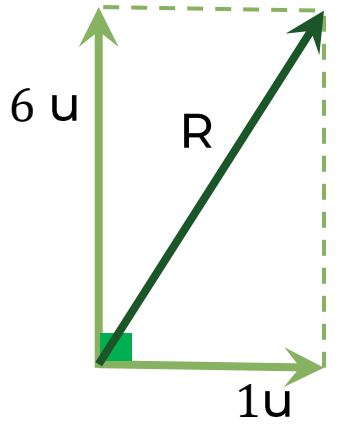
$\vec{R}_x = -1\hat{\imath}$

EN EL EJE y

$\vec{R}_y = 4\hat{\jmath} + 2\hat{\jmath} + 1\hat{\jmath}$

$\vec{R}_y = 7\hat{\jmath}$

GRAFICANDO



Calculo del R

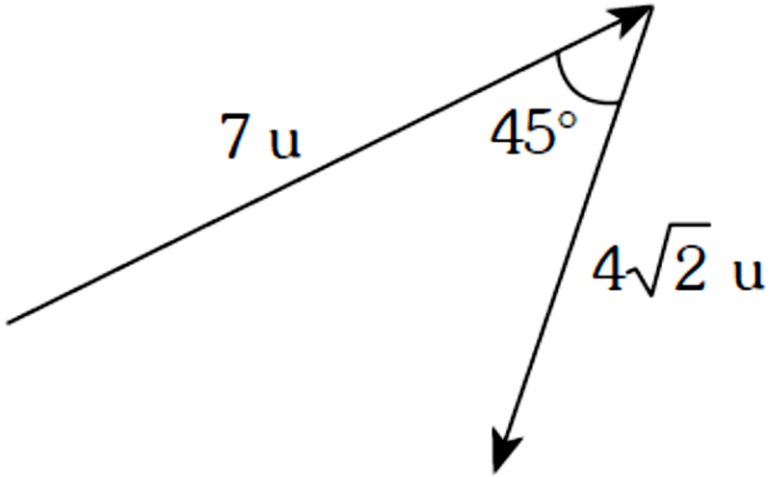
Pitágoras

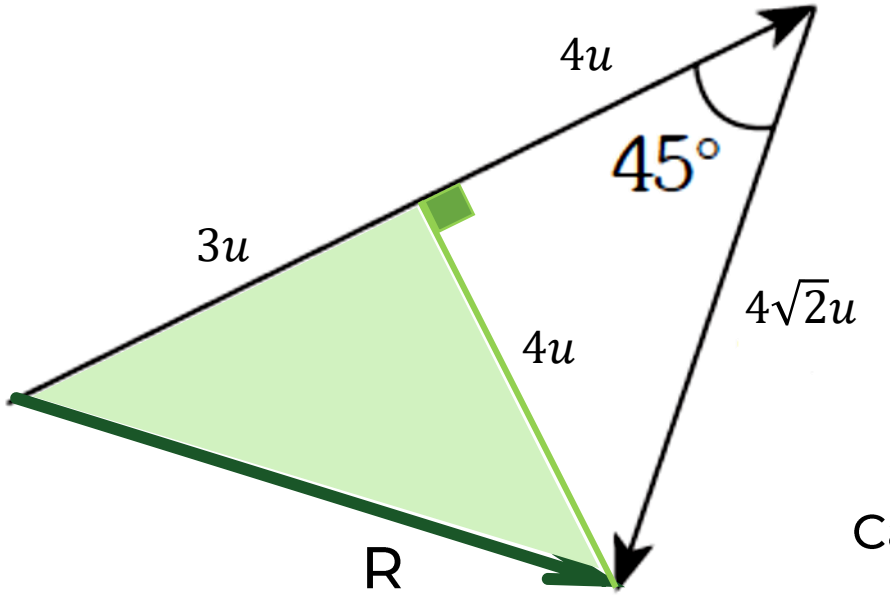
$R = \sqrt{(-1u)^2 + (7u)^2}$

$R = \sqrt{50u^2}$

$R = 5\sqrt{2}$ u

7.-Determine el módulo del vector resultante.





Calculo del R

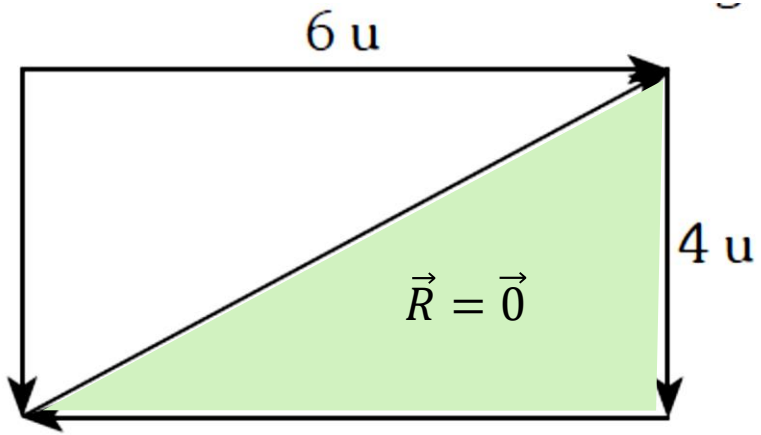
Pitágoras

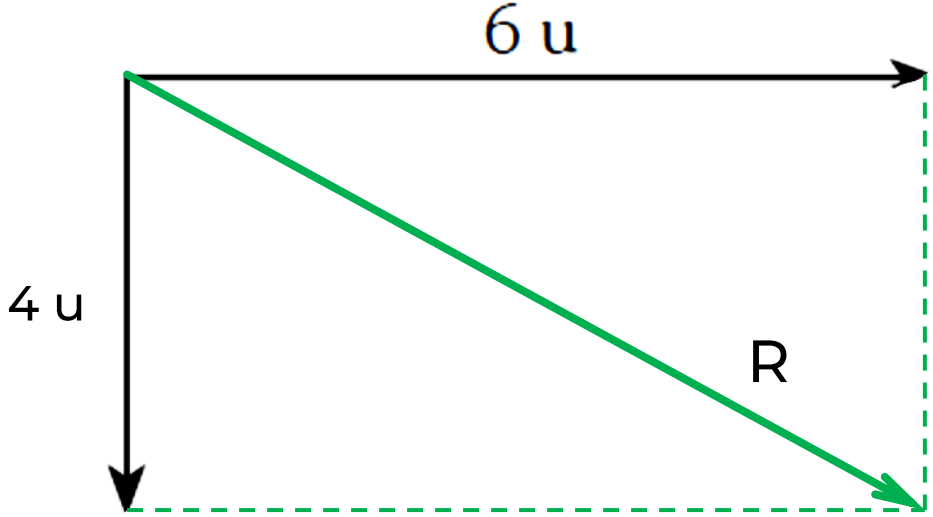
$$R = \sqrt{(3u)^2+(4u)^2}$$

$$R = \sqrt{25u^2}$$

$$R = 5u$$

8.-Determine el módulo de la resultante para los vectores contenidos en el rectángulo.





Calculo del R

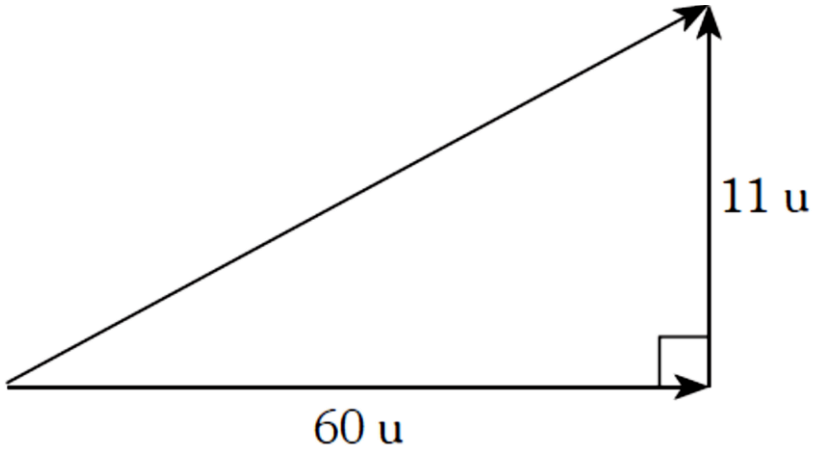
Pitágoras

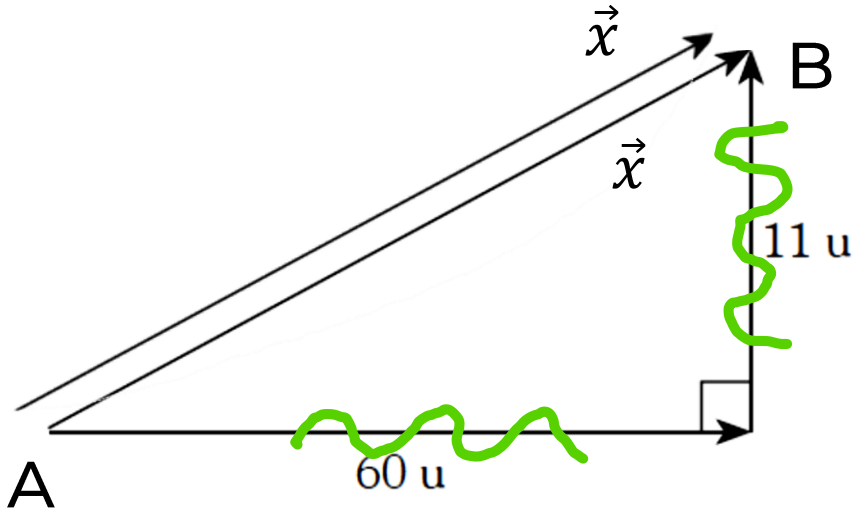
$$R = \sqrt{(4u)^2+(6u)^2}$$

$$R = \sqrt{52u^2}$$

$$R = 2\sqrt{13}\,u$$

9.-Determine el módulo de la resultante de los tres vectores que forman el triángulo rectángulo.





Vector resultante

$$\vec{R} = 2\vec{x}$$

Módulo del Vector resultante

$$R = 2\ x$$

Pitágoras(hipotenusa)

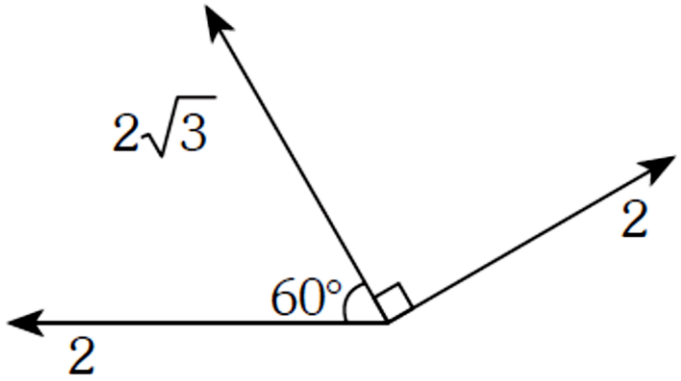
$$\overline{AB} = \sqrt{(60u)^2+(11u)^2}$$

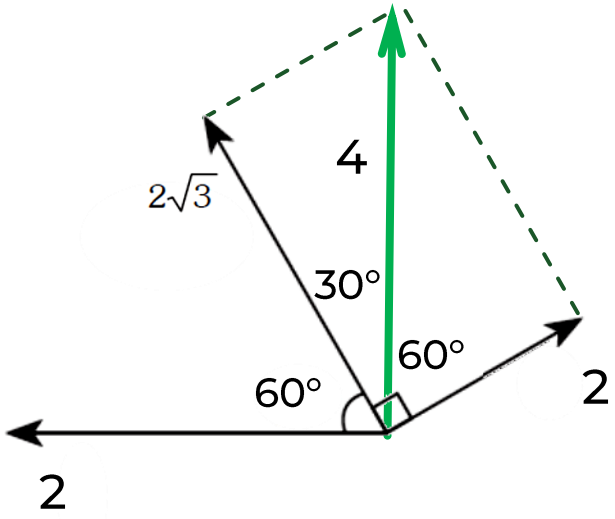
$$\overline{AB} = \sqrt{3721u^2}$$

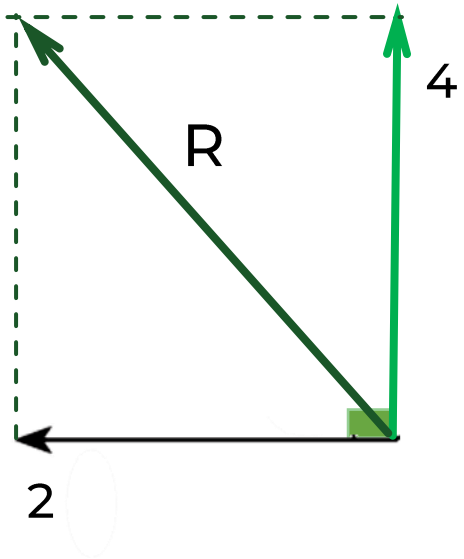
$$\overline{AB} = 61\ u$$

$$R = 122\ u$$

10.-Calcule el módulo del vector resultante.







Calculo del R

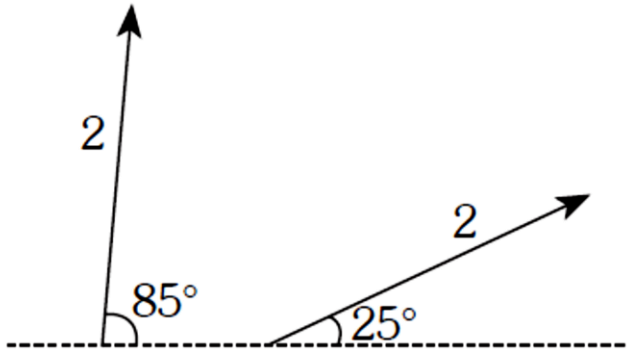
Pitágoras

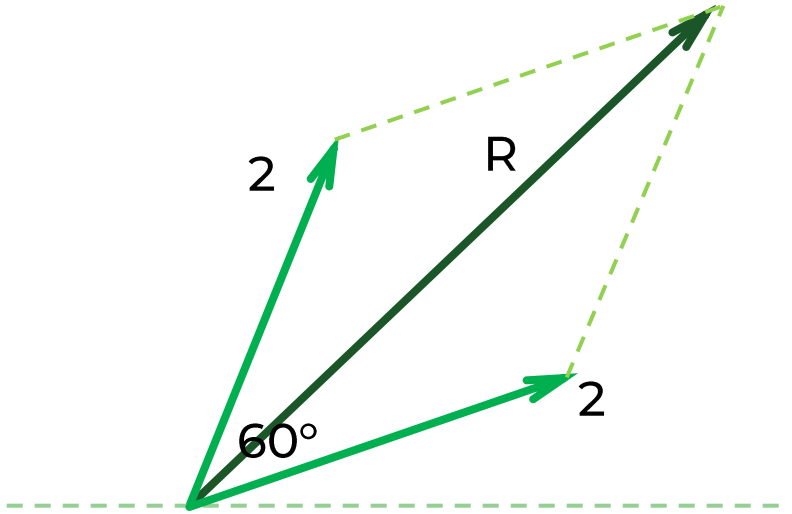
$$R = \sqrt{(2)^2+(4)^2}$$

$$R = \sqrt{20}$$

$$R = 2\sqrt{5}$$

11.- Calcule el módulo del vector resultante de los dos vectores mostrados.





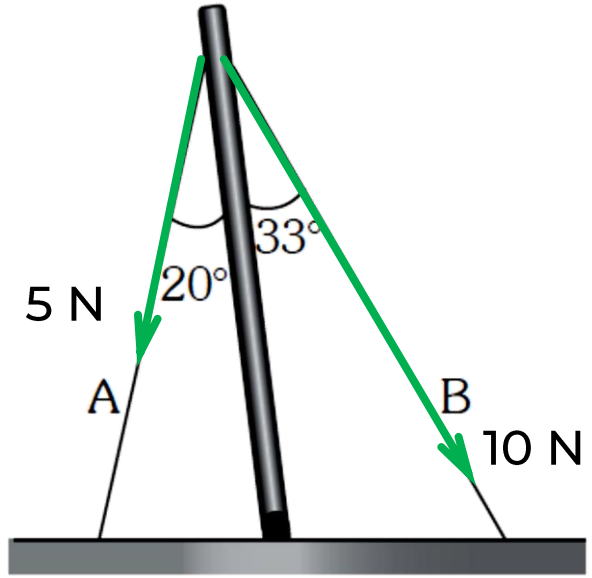
LEY DE COSENOS

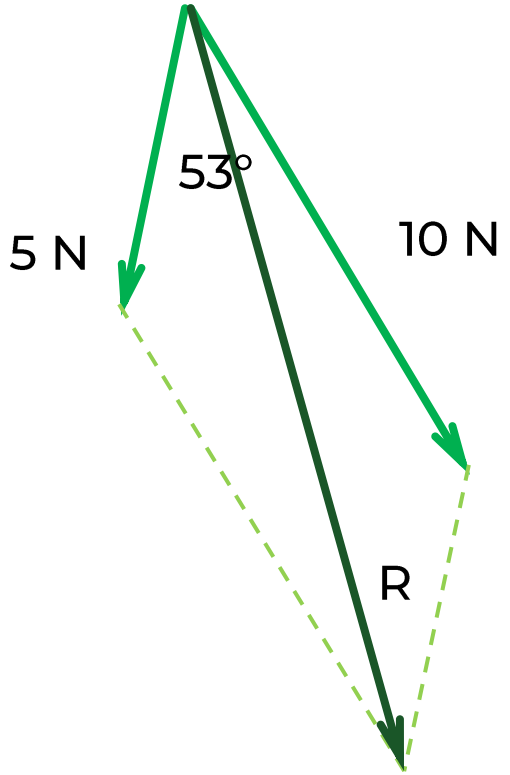
$$R = \sqrt{x^2 + y^2 + 2x \cdot y \cdot COS\alpha}$$

$$R = \sqrt{2^2 + 2^2 + 2 \cdot 2 \cdot 2 \cdot \frac{1}{2}}$$

$$R = 2\sqrt{3}$$

12.-Se muestra un tablón que está siendo sostenido por los cables A y B, los cuales tiene tensiones de 5 N y 10 N, respectivamente. Determine la fuerza resultante de estas dos tensiones en N.





LEY DE COSENOS

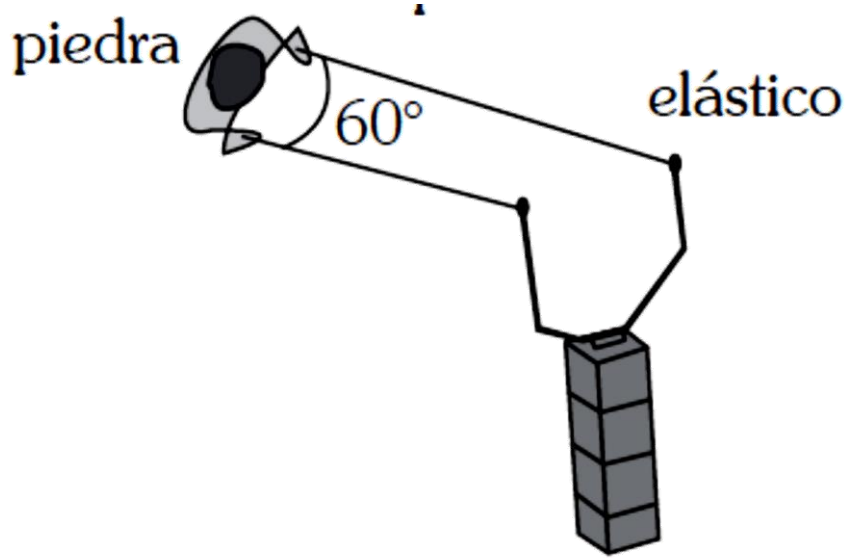
$$R = \sqrt{x^2 + y^2 + 2x \cdot y \cdot COS\alpha}$$

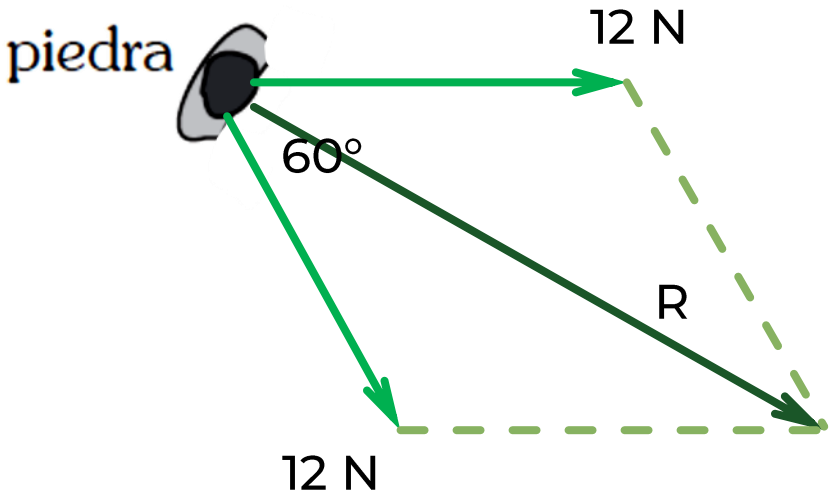
$$R = \sqrt{5^2 + 10^2 + 2 \cdot 5 \cdot 10 \cdot \frac{3}{5}}$$

$$R = \sqrt{125 + 60}$$

$$R = \sqrt{185}$$

13.-Una persona usa una resortera con un elástico para lanzar una piedra. En el instante que suelta la piedra, el elástico aplica una fuerza de 12 N. Para dicho instante, calcule el módulo de la fuerza resultante del elástico sobre la piedra.





LEY DE COSENOS

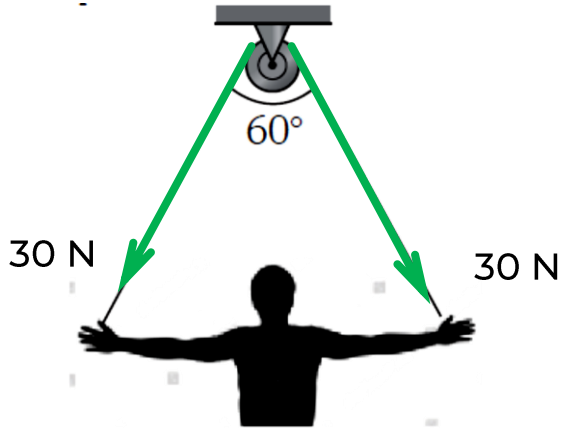
$$R = \sqrt{x^2 + y^2 + 2x \cdot y \cdot COS\alpha}$$

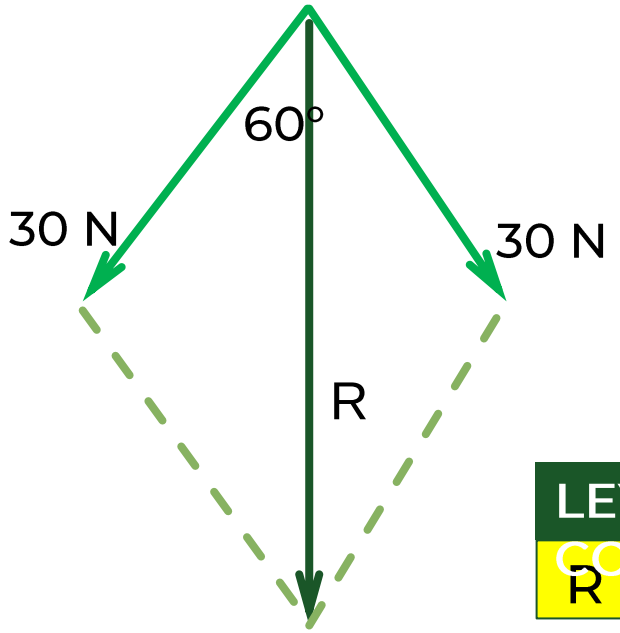
$$R = \sqrt{12^2 + 12^2 + 2 \cdot 12 \cdot 12 \cdot \frac{1}{2}}\ N$$

$$R = \sqrt{3 \cdot (12)^2}\ N$$

$$R = 12\sqrt{3}\ N$$

14.-Un joven entrena los músculos de sus brazos, usando un elástico. Para ello estira el elástico y así producir tensión en sus músculos. En el instante mostrado, el valor de la fuerza en el elástico es de 30 N para cada brazo. Calcule el módulo de la fuerza resultante de las fuerzas elásticas que actúan en los brazos.





LEY DE COSENOS

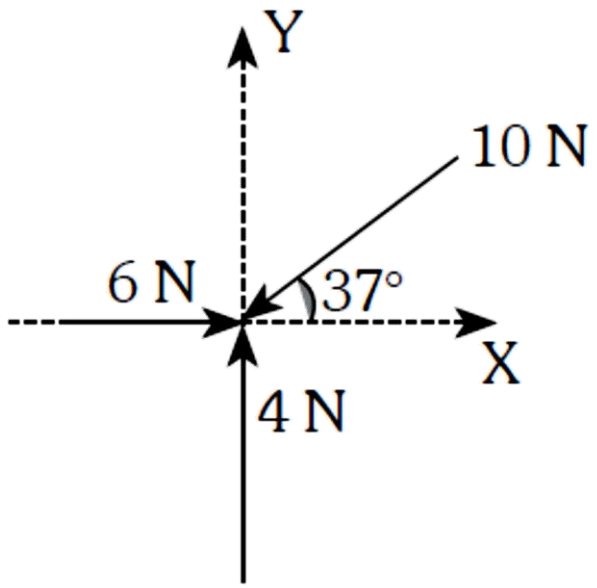
$$R = \sqrt{x^2 + y^2 + 2x \cdot y \cdot COS\alpha}$$

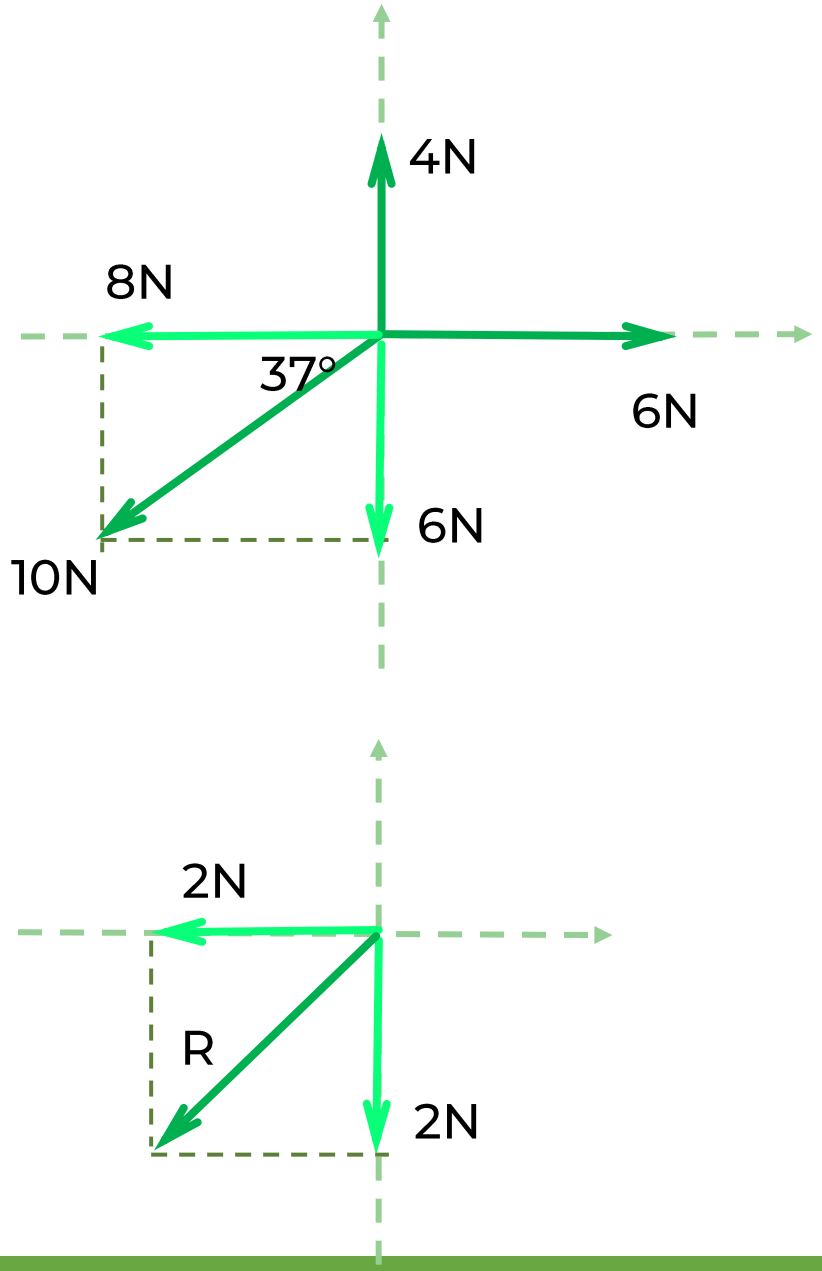
$$R = \sqrt{(30)^2+(30)^2+2 \cdot 30 \cdot 30 \cdot \frac{1}{2}}$$

$$R = \sqrt{3 \cdot (30)^2}$$

$$R = 30\sqrt{3}\ N$$

15.-Del sistema de vectores mostrados, determine el módulo de la resultante.





EN EL EJE X

$\vec{R}_x = -2\hat{\imath}$

EN EL EJE y

$\vec{R}_y = -2\hat{\jmath}$

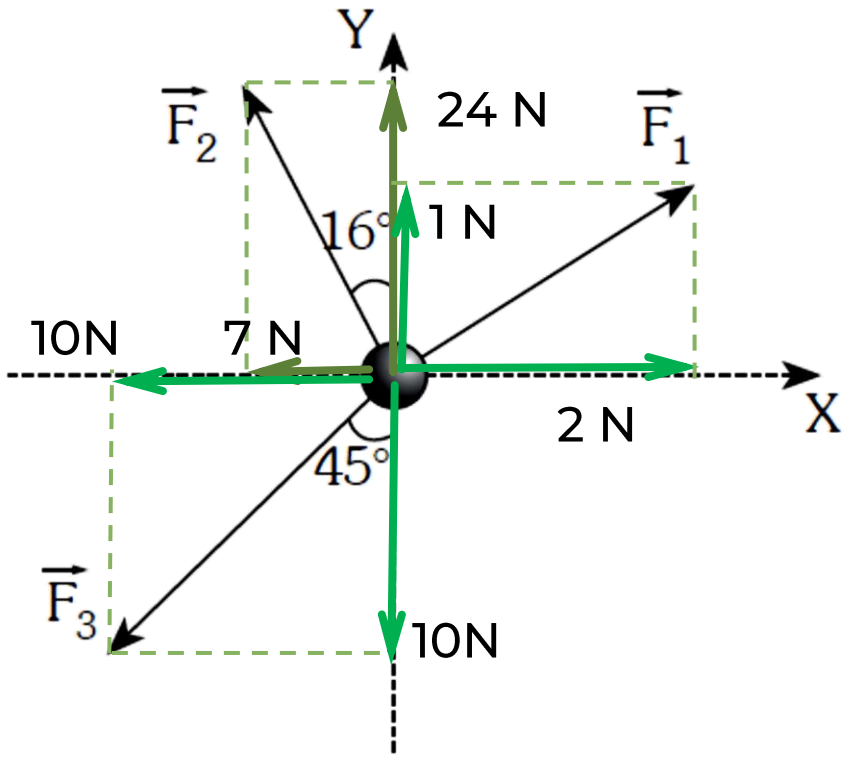
Calculo del R

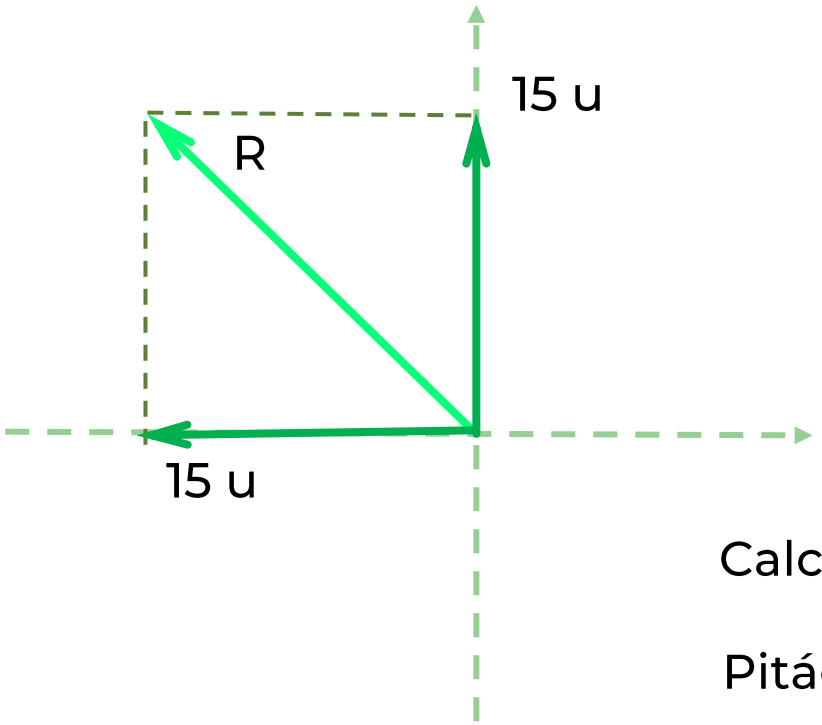
Pitágoras

$R = \sqrt{(2)^2+(2)^2}$

$R = 2\sqrt{2}$ N

16.-Sobre un cuerpo actúan las 3 fuerzas mostradas, $\vec{F}_1 = 2\hat{\imath} + \hat{\jmath}\ N$; $F_2 = 25\ N$; F_3= 10√2 N. Calcule el módulo de la fuerza resultante.





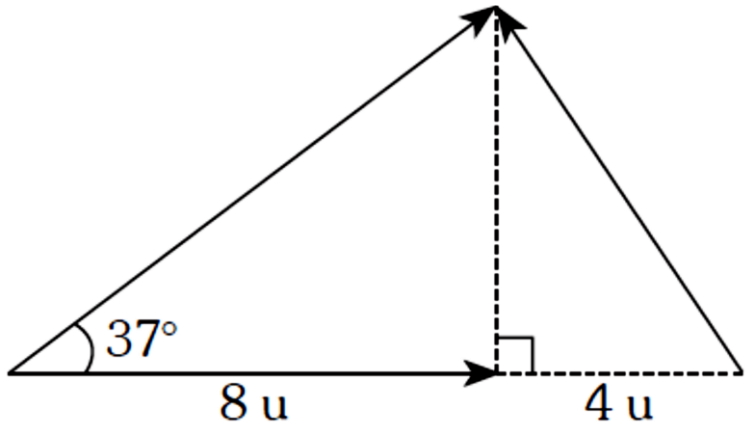
Calculo del R

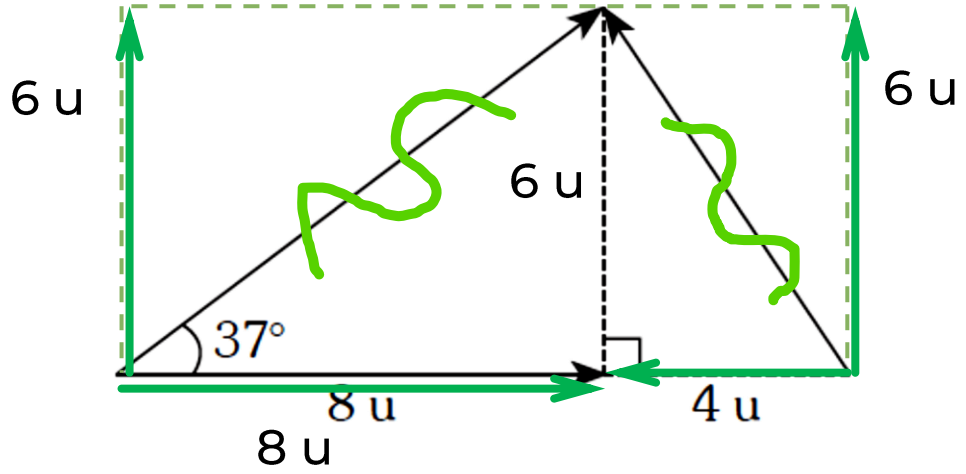
Pitágoras

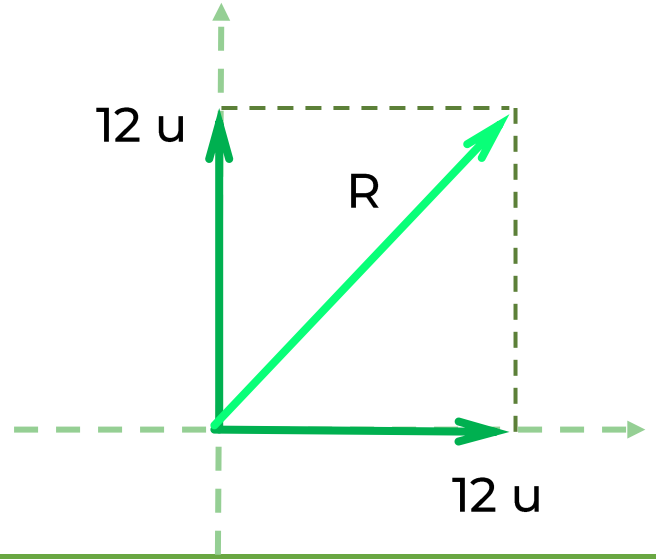
$$R = \sqrt{(15)^2+(15)^2}$$

$$R = 15\sqrt{2}$$

17.-Determine la resultante de los tres vectores mostrados.







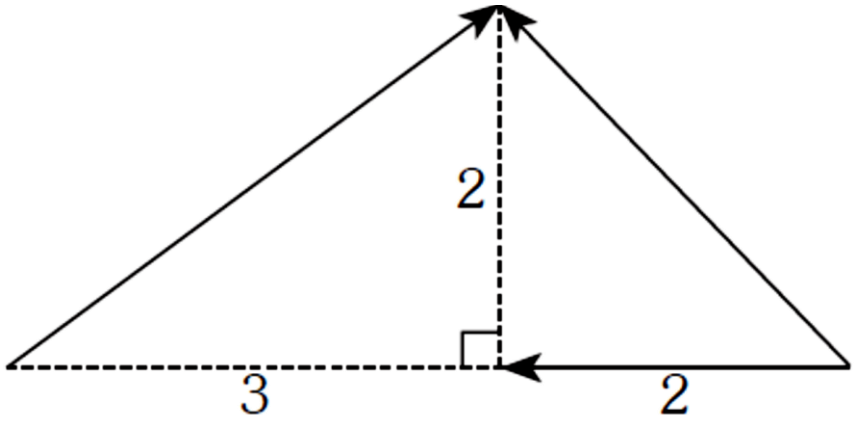
Calculo del R

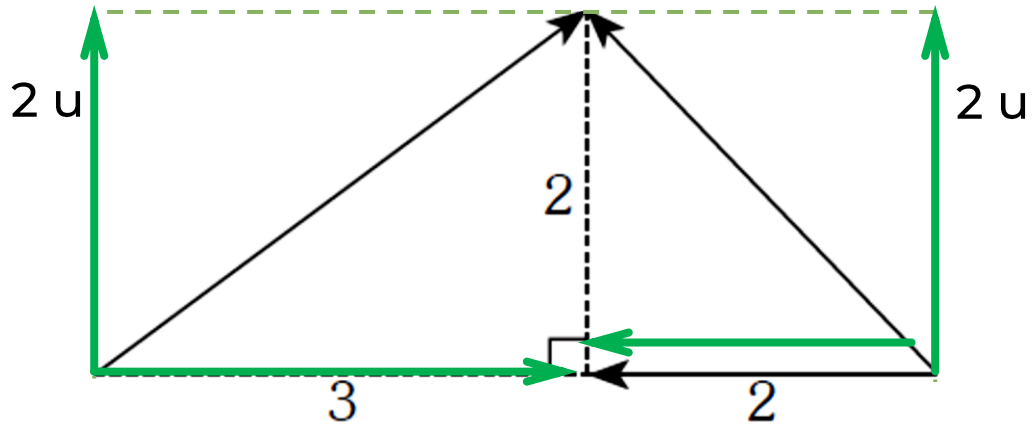
Pitágoras

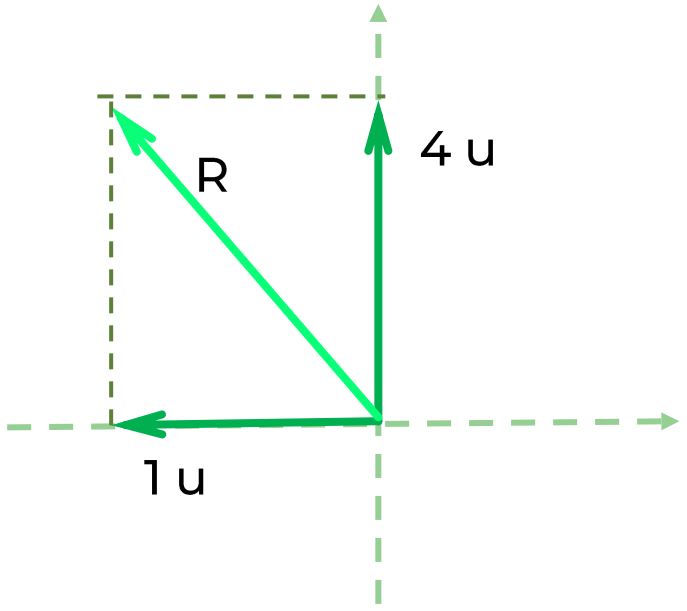
$$R = \sqrt{(12)^2+(12)^2}$$

$$R = 12\sqrt{2}\ u$$

18.-A partir de los vectores mostrados, indique el módulo del vector resultante.







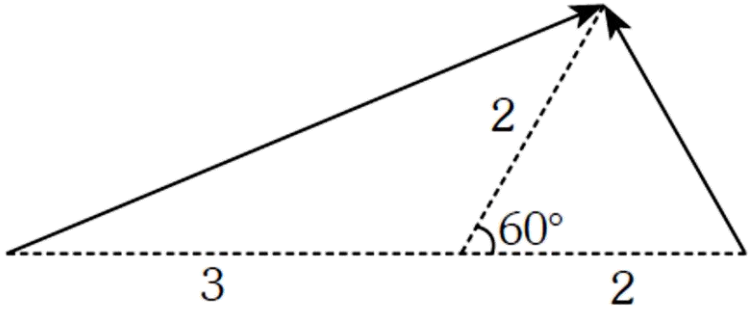
Calculo del R

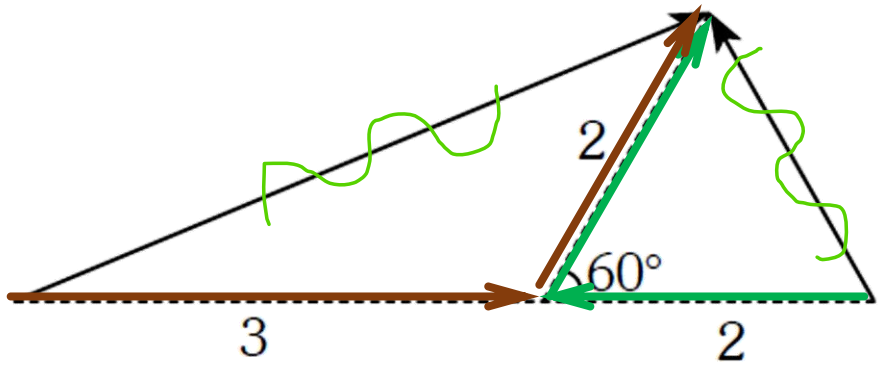
Pitágoras

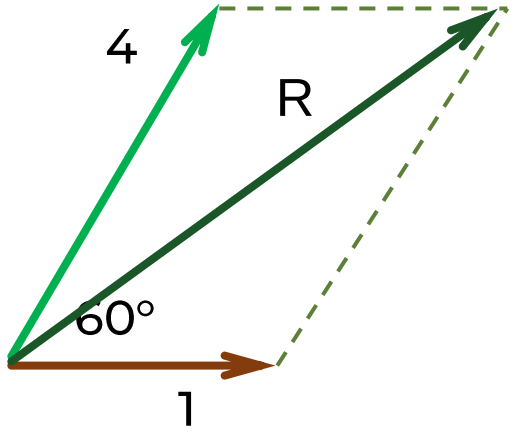
$$R = \sqrt{(1)^2+(4)^2}$$

$$R = \sqrt{17}\,u$$

19.-Calcule el módulo del vector resultante de los dos vectores mostrados.







LEY DE COSENOS

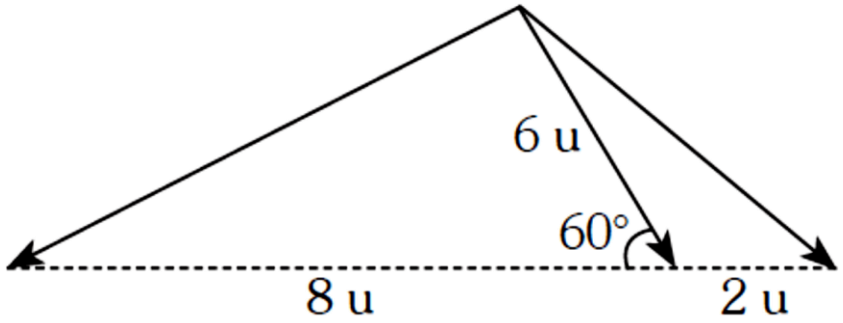
$$R = \sqrt{x^2 + y^2 + 2x \cdot y \cdot COS\alpha}$$

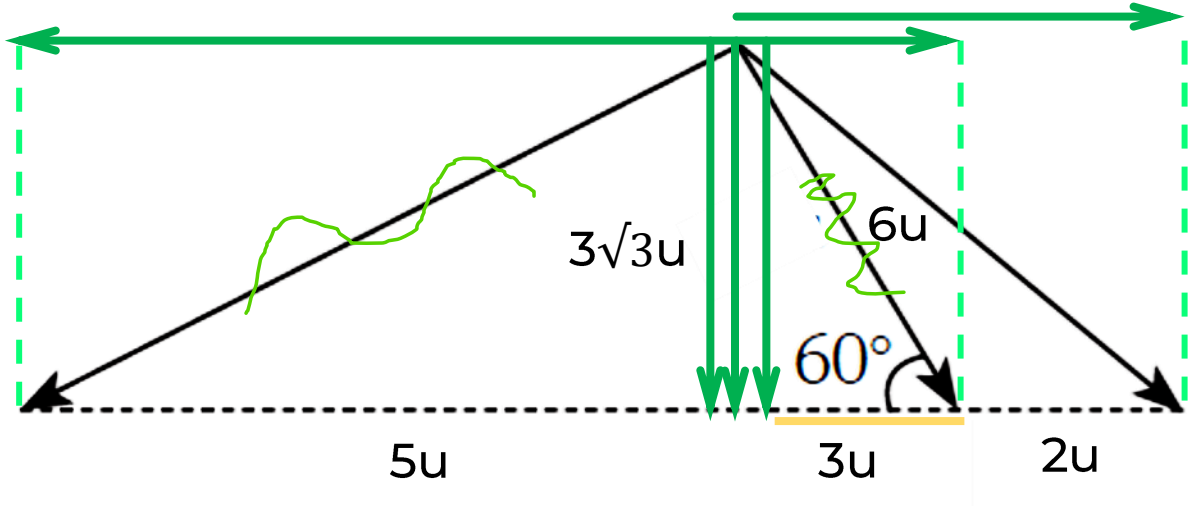
$$R = \sqrt{1^2 + 4^2 + 2 \cdot 1 \cdot 4 \cdot \frac{1}{2}}$$

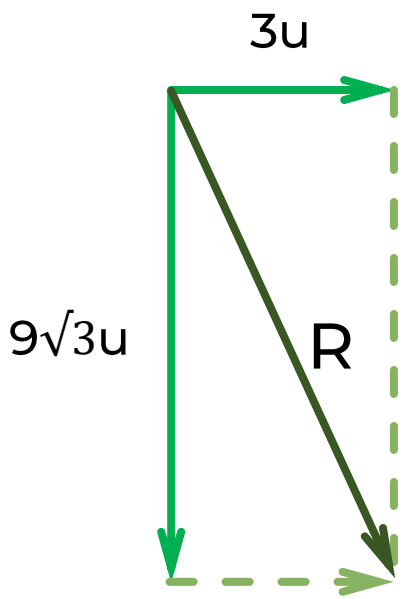
$$R = \sqrt{17 + 4}$$

$$R = \sqrt{21}$$

20.-Considere tres vectores concurrentes del gráfico. Determine la magnitud de su resultante.







Calculo del R

Pitágoras

$$R = \sqrt{(9\sqrt{3}u)^2+(3u)^2}$$

$$R = \sqrt{252u^2}$$

$$R = 6\sqrt{7}\,u$$