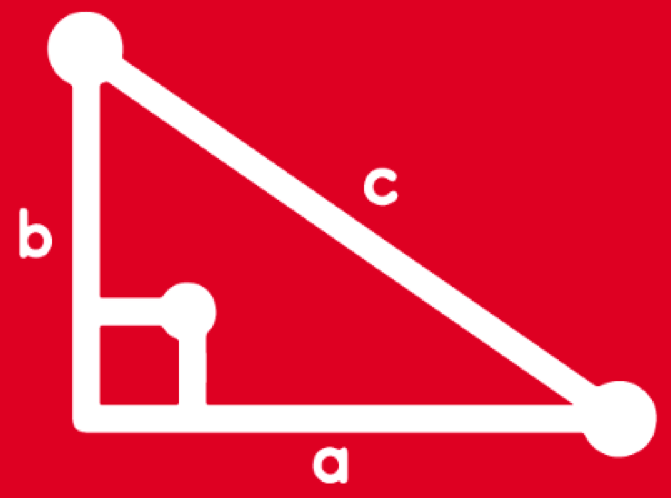
TRIGONOMETRY

VOLUME V

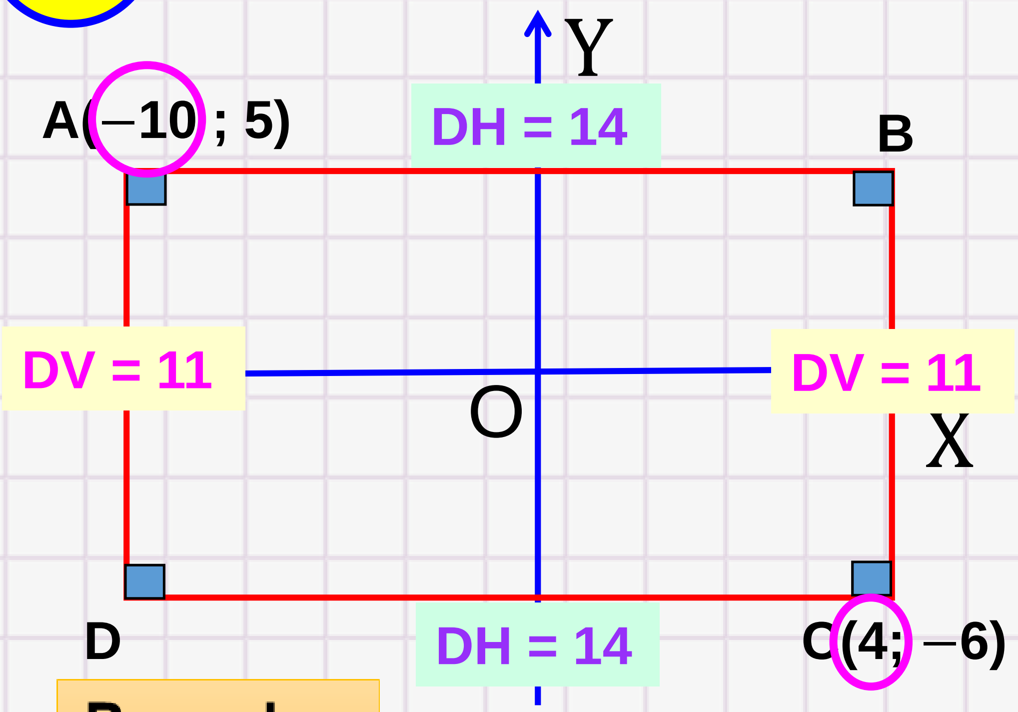
2nd
SECONDARY



FEEDBACK

SACO OLIVEROS

1 Del gráfico, calcule el perímetro del rectángulo ABCD.



Recordar:

Sean los puntos A(x_1; y_1) y B(x_2; y_2)

Además: $x_1 > x_2$ y $y_1 > y_2$

se cumple: $DH = x_1 - x_2$ $DV = y_1 - y_2$

RESOLUCIÓN:

- Calculamos distancia horizontal (DH):

DH = (4) – (–10)

➔ DH = 14

- Calculamos distancia vertical (DV):

DV = (5) – (– 6)

➔ DV = 11

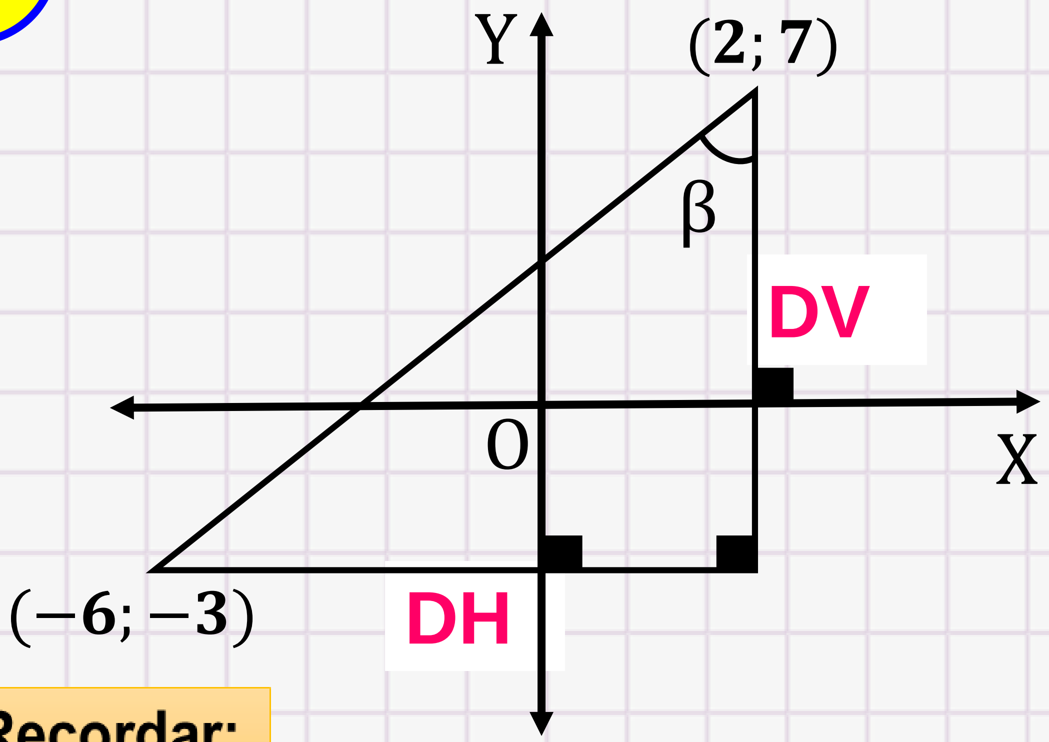
Calculamos

2p▭ABCD = 2(DH) + 2(DV)

➔ 2p▭ABCD = 2(14) + 2(11)

∴ 2p▭ABCD = 50 u

2 Del gráfico, calcule tanβ.



Recordar:

Sean los puntos A(x_1; y_1) y B(x_2; y_2)

Además: $x_1 > x_2$ y $y_1 > y_2$

se cumple: $\boxed{DH = x_1 - x_2}$ $\boxed{DV = y_1 - y_2}$

RESOLUCIÓN:

Del gráfico: $\tan\beta = \dfrac{CO}{CA} = \dfrac{DH}{DV}$

- Calculamos distancia horizontal (DH):

DH = (2) – (–6)

DH = 8

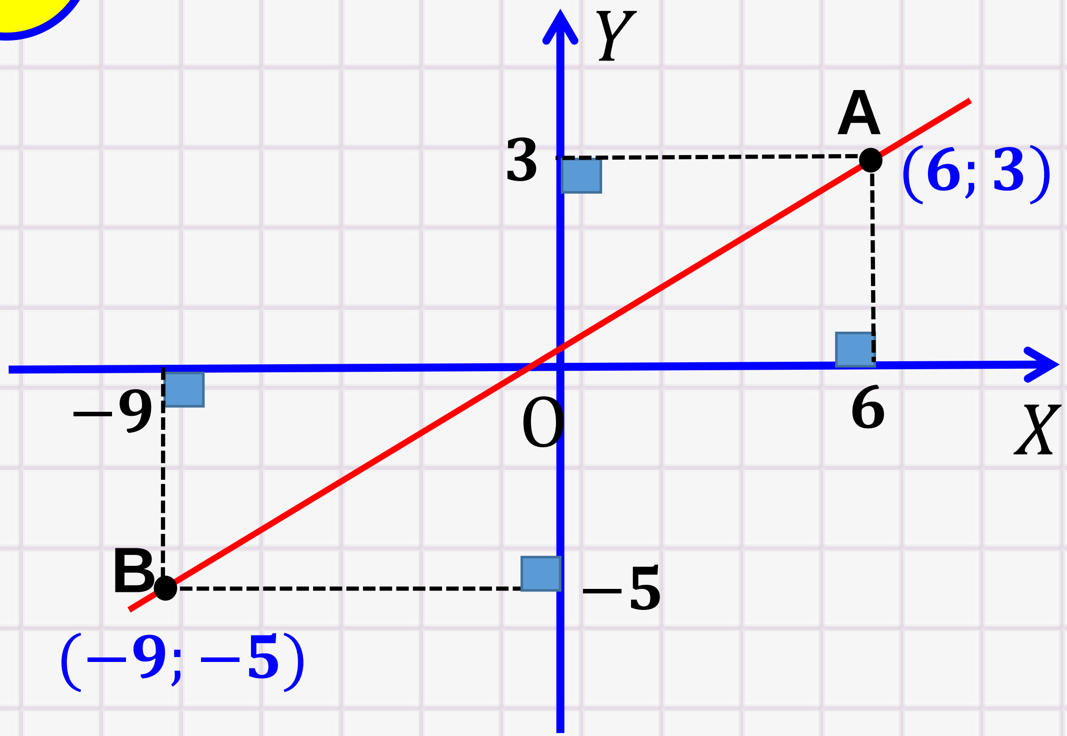
- Calculamos distancia vertical (DV):

DV = (7) – (– 3)

DV = 10

Calculamos: $\tan\beta = \dfrac{DH}{DV} = \dfrac{\cancel{8}^{\,4}}{\cancel{10}_{\,5}}$ $\therefore$ $\boxed{\tan\beta = \dfrac{4}{5}}$

3 **Del gráfico, calcule la longitud del segmento $\overline{AB}$.**



RESOLUCIÓN:

Calculamos la distancia entre los puntos A y B:

$$d\,(\overline{AB}) = \sqrt{[(6)-(-9)]^2 + [(3)-(-5)]^2}$$

$$d\,(\overline{AB}) = \sqrt{[(15)]^2 + [(8)]^2}$$

$$d\,(\overline{AB}) = \sqrt{225 + 64}$$

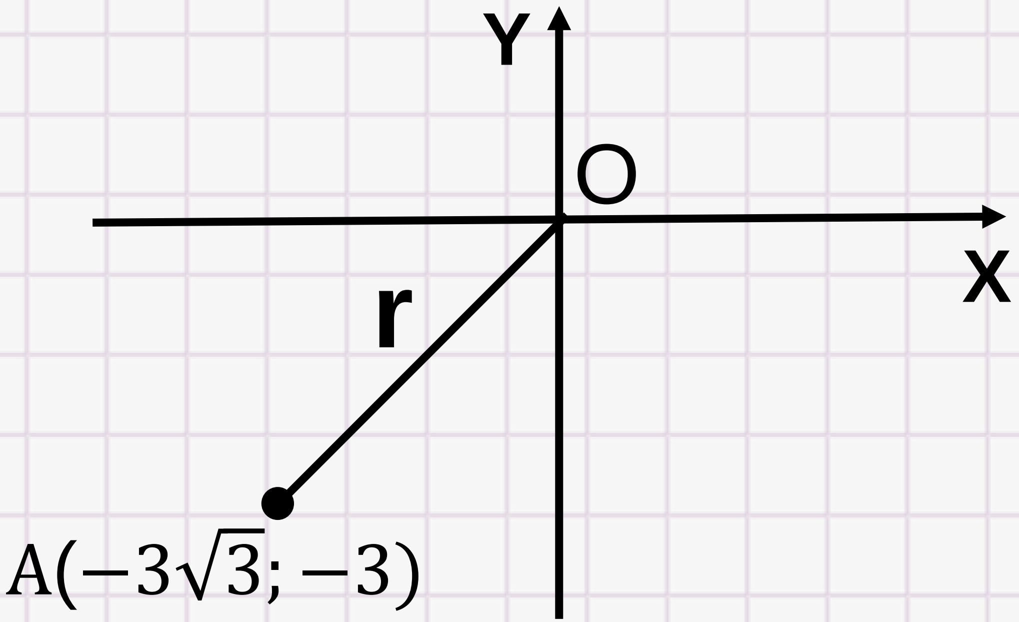
$$d\,(\overline{AB}) = \sqrt{289}$$

$$\therefore\ d\,(\overline{AB}) : 17u$$

Recordar:

$$d\,(\overline{AB}) = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

4 **Del gráfico, calcule la longitud del radio vector (r) del punto A.**



Recordar:

Sea el punto A(x; y) y O el origen de coordenadas, se cumple:

$$\mathbf{r}=\sqrt{x^2+y^2}$$

RESOLUCIÓN:

Calculamos el radio vector del punto A:

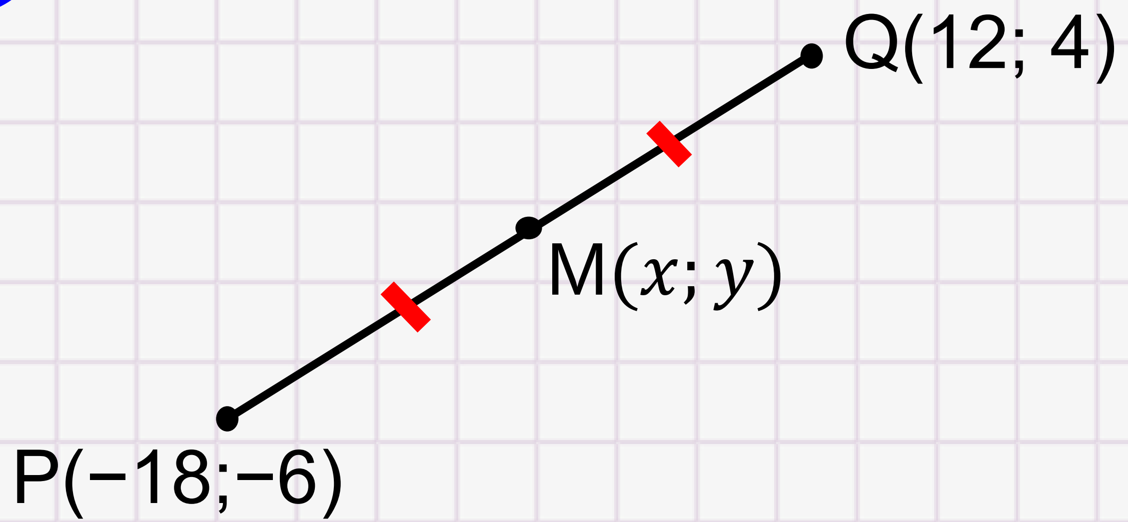
$$r=\sqrt{\left(-3\sqrt{3}\right)^2+(-3)^2}$$

$$r=\sqrt{27+9}$$

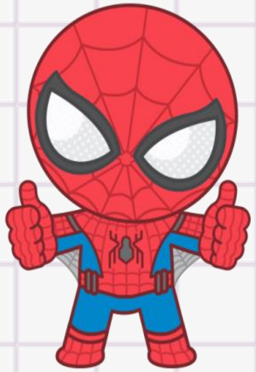
$$r=\sqrt{36}$$

$$\therefore\ \boxed{\mathbf{r=6}}$$

5 **Del gráfico, calcule $\mathbf{E} = x \cdot y$.**



Recordar:



Siendo M(x,y) punto medio del segmento PQ

$$x = \frac{x_1 + x_2}{2} \qquad y = \frac{y_1 + y_2}{2}$$

RESOLUCIÓN:

Calculamos las coordenadas del punto medio M:

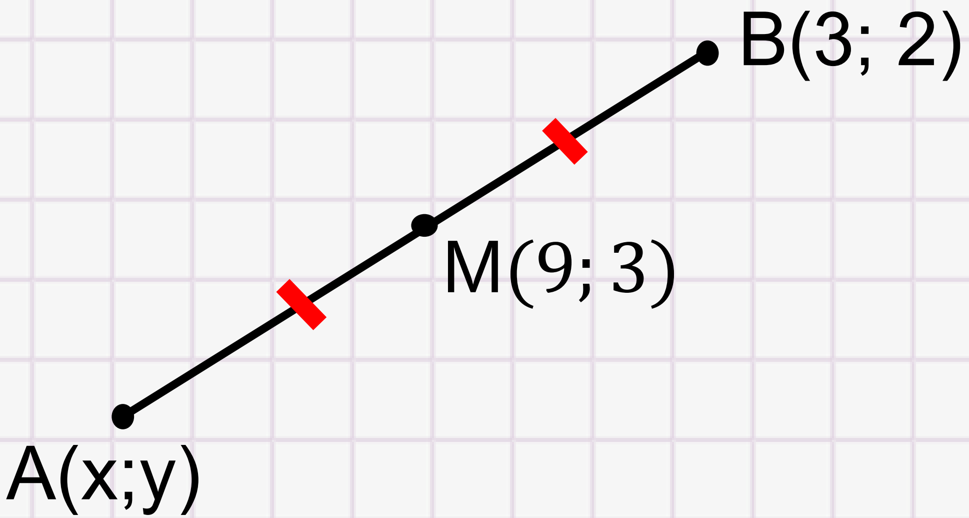
$$\begin{cases} x = \dfrac{-18 + 12}{2} \Rightarrow x = -3 \\[2ex] y = \dfrac{-6 + 4}{2} \Rightarrow y = -1 \end{cases}$$

Calculamos: $\mathrm{E} = x \cdot y$

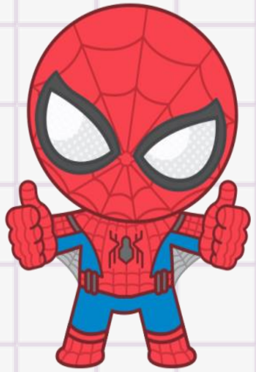
$$\rightarrow \mathrm{E} = (-3)(-1)$$

$$\therefore \boxed{\mathbf{E} = 3}$$

6 **Del gráfico, calcule $T = x - y$.**



Recordar:



Siendo M(x;y) punto medio del segmento AB:

$$x = \frac{x_1 + x_2}{2} \qquad y = \frac{y_1 + y_2}{2}$$

RESOLUCIÓN:

Calculamos las coordenadas del punto A:

$$\begin{cases} 9 = \dfrac{3 + x}{2} \Rightarrow x = 15 \\[2ex] 3 = \dfrac{2 + y}{2} \Rightarrow y = 4 \end{cases}$$

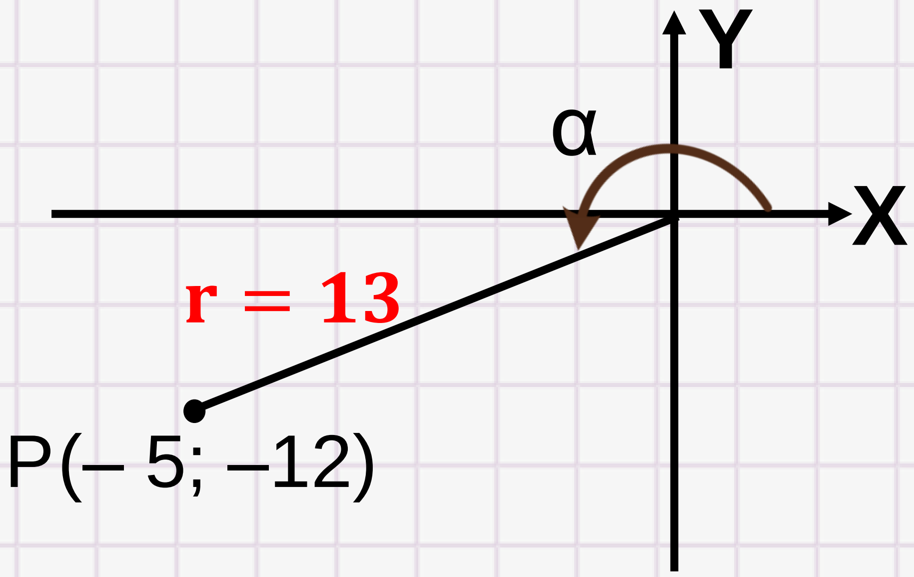
Calculamos: $T = x - y$

$$\rightarrow T = 15 - 4$$

$$\therefore \boxed{T = 11}$$

7 **Del gráfico, efectúe**

$$\mathbf{E = sen\alpha + cos\alpha}$$



Recordar:

$$\operatorname{sen}\alpha = \frac{y}{r} \qquad \cos\alpha = \frac{x}{r}$$

RESOLUCIÓN:

Calculamos radio vector del punto P:

$$\boxed{r = \sqrt{(x)^2 + (y)^2}}$$

$$r = \sqrt{(-5)^2 + (-12)^2}$$

$$r = \sqrt{25 + 144}$$

$$r = \sqrt{169} \Rightarrow r = 13$$

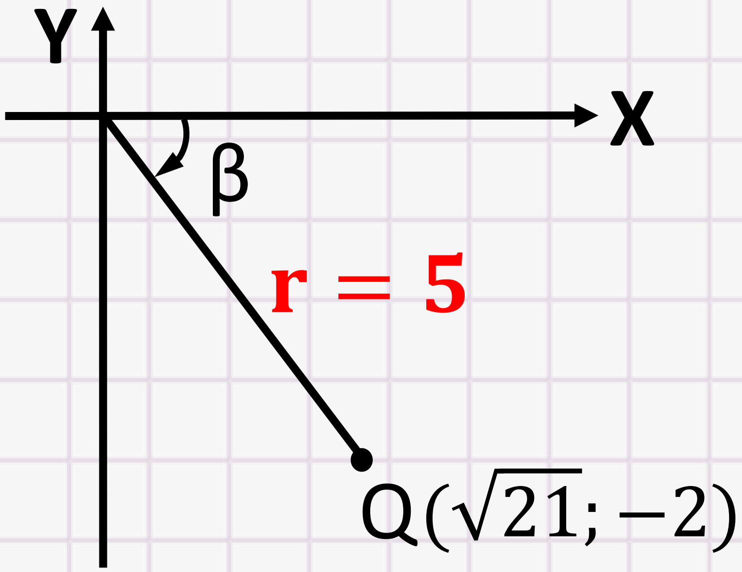
x = – 5	y = – 12	r = 13

Calculamos: E = senα + cosα

$$E = \frac{-12}{13} + \frac{-5}{13} = -\frac{17}{13}$$

8 Del gráfico, efectúe

$$M = \tan\beta \cdot \cos\beta$$



Recordar:

$\tan\beta = \dfrac{y}{x}$ $\quad$ $\cos\beta = \dfrac{x}{r}$

RESOLUCIÓN:

Calculamos radio vector del punto Q:

$$\boxed{r = \sqrt{(x)^2 + (y)^2}}$$

$$r = \sqrt{(\sqrt{21})^2 + (-2)^2}$$

$$r = \sqrt{21 + 4}$$

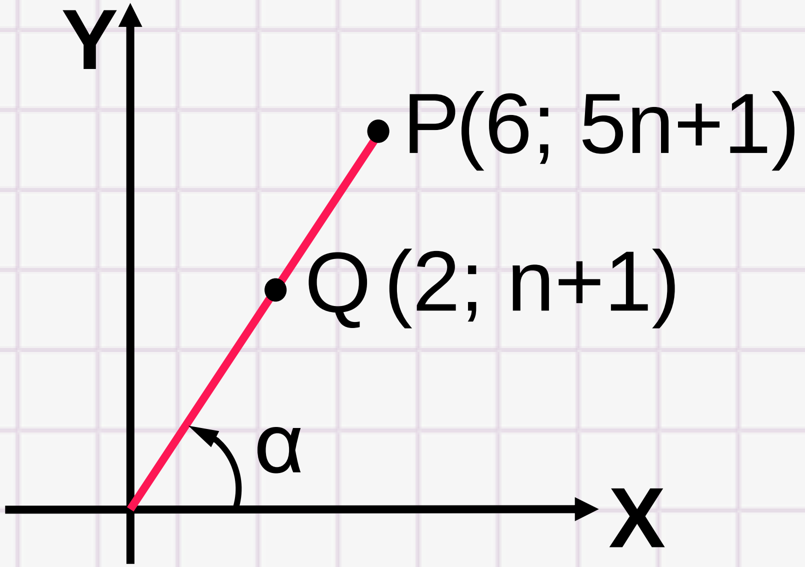
$$r = \sqrt{25} \Rightarrow r = 5$$

$x = \sqrt{21}$	$y = -2$	$r = 5$

Calculamos: $M = \tan\beta.\cos\beta$

$$\Rightarrow M = \left(\frac{-2}{\cancel{\sqrt{21}}}\right)\left(\frac{\cancel{\sqrt{21}}}{5}\right) = -\frac{2}{5}$$

9 **Del gráfico, calcule el valor de n.**



Recordar:

$$\tan\alpha = \frac{y}{x}$$

RESOLUCIÓN:

- Del gráfico:

$$\tan\alpha = \frac{5n+1}{6} \quad \ldots\ldots\ldots\ldots\text{(I)}$$

$$\tan\alpha = \frac{n+1}{2} \quad \ldots\ldots\ldots\ldots\text{(II)}$$

Igualamos (I) y (II):

$$\frac{5n+1}{\cancel{6}_{\,3}} = \frac{n+1}{\cancel{2}_{\,1}} \Rightarrow 5n+1 = 3n+3$$

$$2n = 2$$

$$\therefore \boxed{n = 1}$$

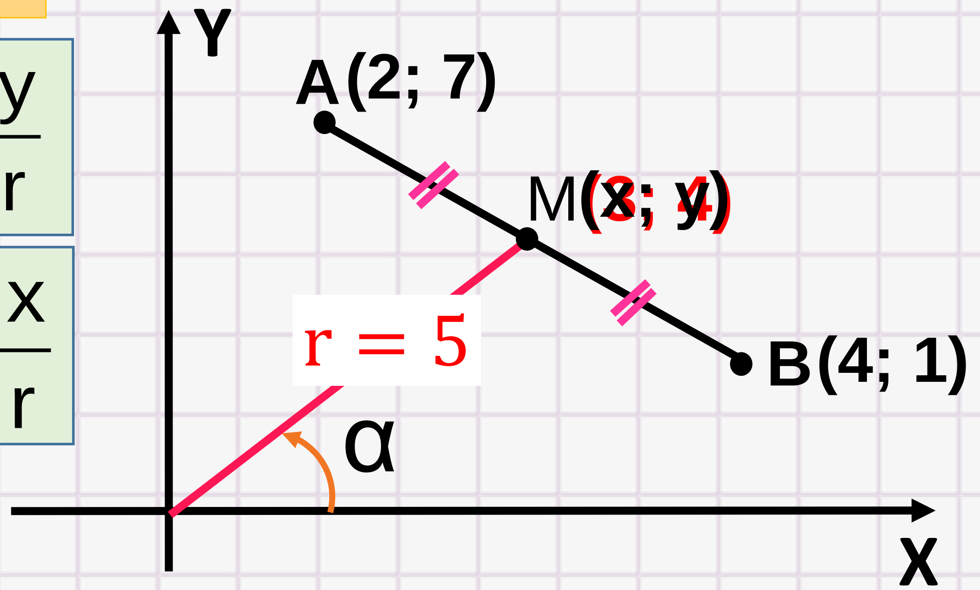
10 **El promedio de Kamila en el curso de trigonometría es P. Para obtenerlo deberás resolver lo siguiente:**

$$\mathbf{P = 10(sen\alpha + cos\alpha)}$$

Recordar:

$$sen\alpha = \frac{y}{r}$$

$$cos\alpha = \frac{x}{r}$$



¿Cuál es el promedio de Kamila?

RESOLUCIÓN:

- Calculamos coordenadas del punto M:

$$M\begin{cases} x = \dfrac{2+4}{2} = 3 \\ y = \dfrac{7+1}{2} = 4 \end{cases} \Rightarrow M = (3;4)$$

- Calculamos radio vector de M :

$$\boxed{r = \sqrt{(x)^2 + (y)^2}} \Rightarrow r = \sqrt{3^2 + 4^2} \Rightarrow r = 5$$

x = 3	y = 4	r = 5

$$\Rightarrow P = \cancel{10}^{2}\left(\left(\frac{4}{\cancel{5}}\right) + \left(\frac{3}{\cancel{5}}\right)\right) \Rightarrow P = 14$$

$\therefore$ **Kamila obtuvo 14 de promedio**

SACO
OLIVEROS