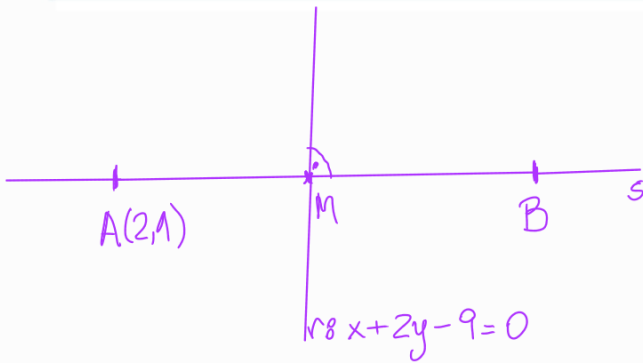


51. Halla el extremo B del segmento $\overline{AB}$ siendo $A(2, 1)$ y sabiendo que la mediatriz del segmento es $r: x+2y-9=0$



¿B? Necesito obligatoriamente hallar M

$$M = r \cap S_{AB}$$

$$S_{AB} \begin{cases} A(2,1) \\ S \perp r \Rightarrow \vec{v}_s = \vec{n}_r = (1,2) \end{cases}$$

$$m = \frac{v_2}{v_1} = \frac{2}{1} = 2$$

$$S_{AB}: y = mx + n$$

$$y = 2x + n \quad \text{pero } A(2,1) \in S_{AB}$$

$$1 = 2 \cdot 2 + n$$

$$1 = 4 + n$$

$$1 - 4 = n \Rightarrow n = -3$$

$$S_{AB}: y = 2x - 3$$

$$M = r \cap S_{AB} \begin{cases} r: x+2y-9=0 \\ S: y=2x-3 \end{cases} \Rightarrow \begin{cases} x+2(2x-3)-9=0 \\ x+4x-6-9=0 \end{cases}$$

$$5x - 15 = 0$$

$$5x = 15$$

$$x = \frac{15}{5} = 3$$

$$y = 2 \cdot 3 - 3 = 6 - 3 = 3$$

Luego $M = (3, 3)$ y es el pto medio de $\overline{AB}$:

$$\begin{cases} 3 = \frac{2+x'}{2} \Rightarrow 6 = 2+x' \Rightarrow x' = 6-2 = 4 \\ 3 = \frac{1+y'}{2} \Rightarrow 6 = 1+y' \Rightarrow y' = 6-1 = 5 \end{cases} \Rightarrow B = (4, 5)$$

117. Dada las rectas $r: x - 4y + 2 = 0$ y $s: 2x - 3y = -4$:

a) Calcula su punto de corte.

b) Demuestra que el punto $P(1, 2)$ pertenece a s y calcula su simétrico respecto de la recta r .

a) $P = r \cap s = \begin{cases} x - 4y + 2 = 0 \\ 2x - 3y + 4 = 0 \end{cases} \xrightarrow{2E_1} \begin{cases} 2x - 8y + 4 = 0 \\ 2x - 3y + 4 = 0 \end{cases}$

$\ominus \quad / \quad -5y \quad / = 0$

$y = 0$

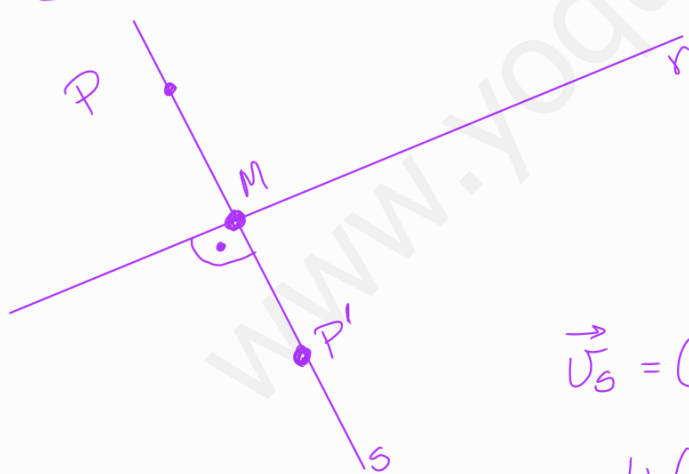
$x - 4 \cdot 0 + 2 = 0$

$x = -2$

$P(-2, 0)$

b) $\overset{\circ}{\in} P(1,2) \in S? \Rightarrow 2 \cdot 1 - 3 \cdot 2 + 4 = 0$
 $2 - 6 + 4 = 0$
 $0 = 0 \Rightarrow \boxed{P \in S}$

¿Simétrico de $P_r = P'$?



M pto medio de $\overline{PP'}$

$$M = r \wedge s \quad \text{tal que} \quad s \begin{cases} P(1,2) \\ s \perp r \\ \vec{U}_s = \vec{n}_r = \\ = (1, -4) \end{cases}$$

$$\vec{v}_S = (1, -4) \Rightarrow \vec{n}_S = (4, 1)$$

$$S: 4(x-1) + 1(y-2) = 0$$
$$4x + y - 6 = 0$$

$$M = r \cap s = \begin{cases} x - 4y + 2 = 0 & \longrightarrow \underline{x = 4y - 2} \\ 4x + y - 6 = 0 & \longrightarrow 4 \cdot (4y - 2) + y - 6 = 0 \\ & 16y - 8 + y - 6 = 0 \\ & 17y - 14 = 0 \\ & 17y = 14 \longrightarrow \underline{y = \frac{14}{17}} \end{cases}$$

Luego $x = 4y - 2$

$$\underline{x = 4 \cdot \frac{14}{17} - 2 = \frac{56}{17} - 2 = \frac{56-34}{17} = \frac{22}{17}}$$

$M = \left(\frac{22}{17}, \frac{14}{17}\right)$ que es pto medio de $\overline{PP'}$:

$$\begin{cases} \frac{22}{17} = \frac{1+x'}{2} \Rightarrow 44 = 17+17x' \Rightarrow 44-17=17x' \Rightarrow 27=17x' \\ \frac{14}{17} = \frac{2+y'}{2} \Rightarrow 28 = 34+17y' \Rightarrow 28-34=17y' \Rightarrow -6=17y' \end{cases}$$

$$\underline{x' = \frac{27}{17}} \quad \underline{y' = \frac{-6}{17}}$$

Por lo tanto $\boxed{P' = \left(\frac{27}{17}, \frac{-6}{17}\right)}$