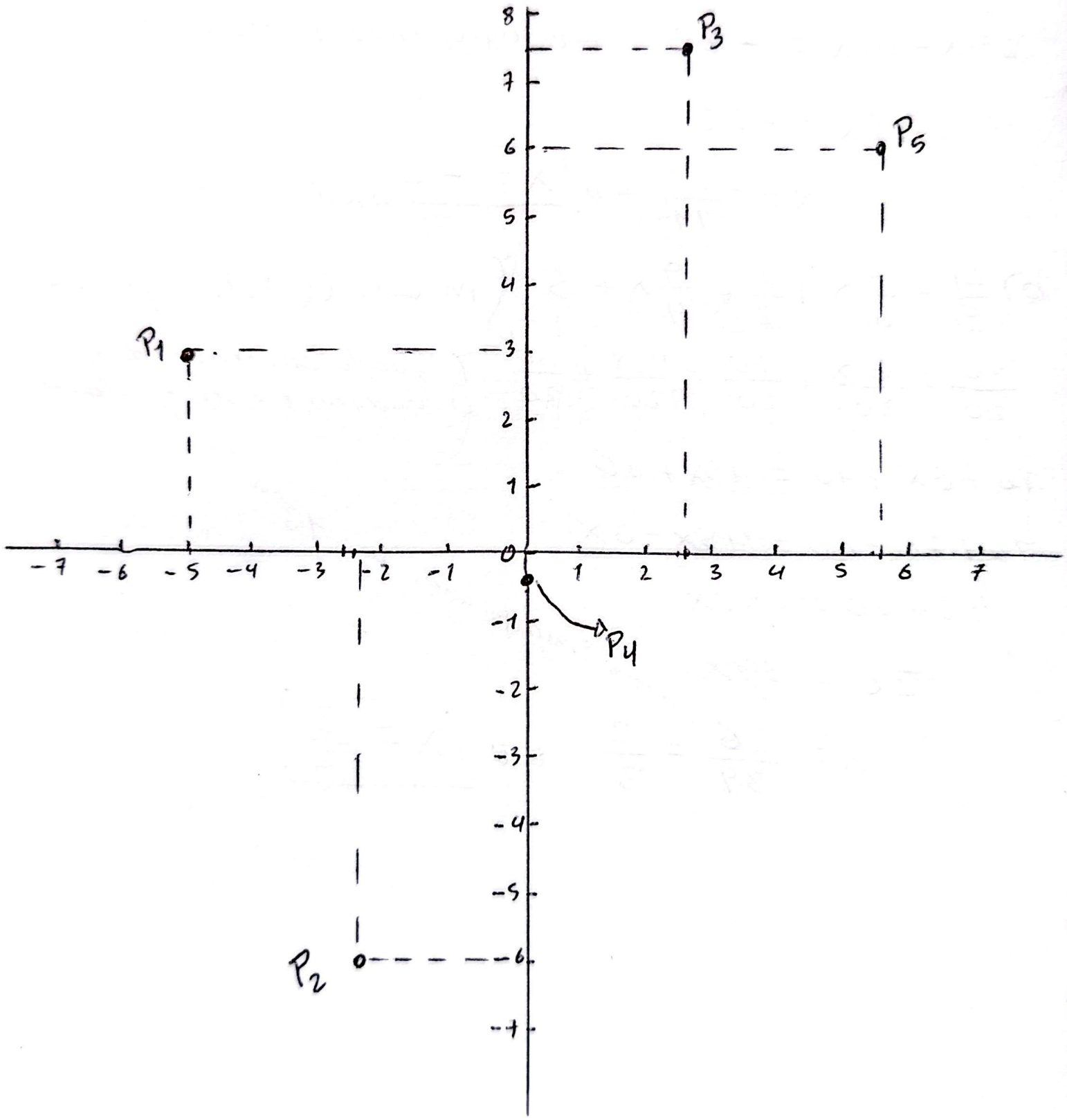
# Solución Taller Matemáticas 11° 4

① Ubicar: $P_1(-5,3)$ $P_2\left(-\frac{7}{3},-6\right)$ $P_3\left(\frac{8}{3},\frac{15}{2}\right)$

$P_4\left(0,-\frac{2}{5}\right)$ $P_5\left(\frac{23}{4},\frac{12}{2}\right)$



② Distancia:

a) $|P_1, P_3| = ?$ ⇒ $P_1(-5, 3)$ y $P_3\left(\frac{8}{3}, \frac{15}{2}\right)$ ($x_1, y_1$; $x_2, y_2$)

Fórmula: $|P_1, P_3| = \sqrt{\left(\frac{8}{3} - \left(\frac{-5}{1}\right)\right)^2 + \left(\frac{15}{2} - \frac{3}{1}\right)^2}$

$$= \sqrt{\left(\frac{8}{3} + \frac{5}{1}\right)^2 + \left(\frac{15}{2} - \frac{6}{2}\right)^2}$$

$$= \sqrt{\left(\frac{8}{3} + \frac{15}{3}\right)^2 + \left(\frac{15-6}{2}\right)^2}$$

$$= \sqrt{\left(\frac{23}{3}\right)^2 + \left(\frac{9}{2}\right)^2} = \sqrt{\frac{529}{9} + \frac{81}{4}}$$

$$= \sqrt{\frac{2116 + 729}{36}} = \sqrt{\frac{2845}{36}} = \frac{\sqrt{2845}}{6}$$

RM $\boxed{|P_1 P_3| = \frac{\sqrt{2845}}{6}}$

b) $|P_2 P_4| = ?$ ⇒ $P_2\left(\frac{-7}{3}, \frac{-6}{5}\right)$ y $P_4\left(0, \frac{-2}{5}\right)$ ($x_1, y_1$; $x_2, y_2$)

$$= \sqrt{\left(\frac{0}{1} - \left(\frac{-7}{3}\right)\right)^2 + \left(\frac{-2}{5} - \left(\frac{-6}{1}\right)\right)^2} = \sqrt{\left(\frac{7}{3}\right)^2 + \left(\frac{-2}{5} + \frac{6}{1}\right)^2}$$

$$= \sqrt{\left(\frac{7}{3}\right)^2 + \left(\frac{-2+30}{5}\right)^2} = \sqrt{\frac{49}{9} + \left(\frac{28}{5}\right)^2} = \sqrt{\frac{49}{9} + \frac{784}{25}}$$

$$= \sqrt{\frac{1225+7056}{225}} = \sqrt{\frac{8281}{225}} = \frac{91}{15}$$ luego

RM $\boxed{|P_2 P_4| = \frac{91}{15}}$

③ Punto Medio

a) $P_m(P_2 \text{ y } P_4) = ? \Rightarrow P_2\left(\overset{x_1}{-\frac{7}{3}}, -6\right)$ y $P_4\left(\overset{x_2}{0}, -\frac{2}{5}\right)$

$P_m = \left[\left(\frac{x_1+x_2}{2}\right); \left(\frac{y_1+y_2}{2}\right)\right]$ Formula

$$P_m(P_2 \text{ y } P_4) = \left[\left(\frac{-\frac{7}{3}+0}{2}\right); \left(\frac{-\frac{6}{1}+\left(-\frac{2}{5}\right)}{2}\right)\right] = \left[\left(\frac{-\frac{7}{3}}{2}\right); \left(\frac{-\frac{6}{1}-\frac{2}{5}}{2}\right)\right]$$

$$= \left[\left(\frac{-\frac{7}{2}}{\frac{2}{1}}\right); \left(\frac{\frac{-30-2}{5}}{\frac{2}{1}}\right)\right] = \left[\left(\frac{-7}{4}\right); \left(\frac{\frac{-32}{5}}{\frac{2}{1}}\right)\right]$$

$$= \left(-\frac{7}{4}, \frac{-32}{10}\right) = \boxed{\left(-\frac{7}{4}, \frac{-16}{5}\right)} \text{ RM}$$

b) $P_m(P_3 \text{ y } P_5) = ? \Rightarrow \left(\underset{x}{\frac{8}{3}}, \underset{y}{\frac{15}{2}}\right)$ y $\left(\underset{x}{\frac{23}{4}}, \underset{y}{\frac{12}{2}}\right)$

$$P_m = \left[\left(\frac{\frac{8}{3}+\frac{23}{4}}{2}\right); \left(\frac{\frac{15}{2}+\frac{12}{2}}{2}\right)\right] = \left[\left(\frac{\frac{32+69}{12}}{2}\right); \left(\frac{\frac{27}{2}}{2}\right)\right]$$

$$P_m = \left[\left(\frac{\frac{101}{12}}{\frac{2}{1}}\right); \left(\frac{\frac{27}{2}}{\frac{2}{1}}\right)\right] = \boxed{\left[\frac{101}{24}, \frac{27}{4}\right]} \text{ RM}$$

(4) Ecuaciones

a) $2(5-3x)+22x = 8x - 3(x+4)$

$10 - 6x + 22x = 8x - 3x - 12$ ⇒ Distributiva

$-6x + 22x + 3x - 8x = -12 - 10$ ⇒ Trasposición de términos.

$25x - 14x = -22$ ⇒ agrupando y resolviendo

$11x = -22$

$x = -\frac{22}{11}$ ⇒ $\boxed{x = -2}$ $\mathbb{R}$

b) $\frac{4}{5} + \frac{3}{10}x + \frac{7}{2} = \frac{9}{4}x + \frac{3}{1}$ } $m.c.m(5,10,2,4,1) = 20$

$\frac{16}{20} + \frac{6x}{20} + \frac{70}{20} = \frac{45x}{20} + \frac{60}{20}$ } Puedo eliminar denominadores por ser iguales

$16 + 6x + 70 = 45x + 60$

$16 + 70 - 60 = 45x - 6x$

$86 - 60 = 39x$

$26 = 39x$ ⇒ simplificando por 13ava

$x = \frac{26}{39} = \frac{2}{3}$ ⇒ $\boxed{x = \frac{2}{3}}$