

④ $\begin{array}{ccc} & P(-1,6) & \\ & \cdot & \\ A(-3,10) & \text{---} & B(6,-8) \\ & \begin{array}{cc} k & 1 \end{array} & \end{array}$

let the ratio be $k:1$

$$-1 = \frac{6k + 1(-3)}{k+1}$$

$$-1 = \frac{6k-3}{k+1}$$

$$\Rightarrow -k-1 = 6k-3$$

$$\Rightarrow 7k = 2$$

$$\Rightarrow k = \frac{2}{7}$$

\therefore reqd. ratio $2:7$

⑤ $\begin{array}{ccc} & P(x,0) & \\ & \cdot & \\ A(1,-5) & \text{---} & B(-4,5) \\ & \begin{array}{cc} k & 1 \end{array} & \end{array}$

let the ratio be $k:1$

$$0 = \frac{5k + 1(-5)}{k+1}$$

$$0 = \frac{5k-5}{k+1}$$

$$\Rightarrow 0 = 5k-5$$

$$\Rightarrow 5k = 5$$

$$\Rightarrow k = 1$$

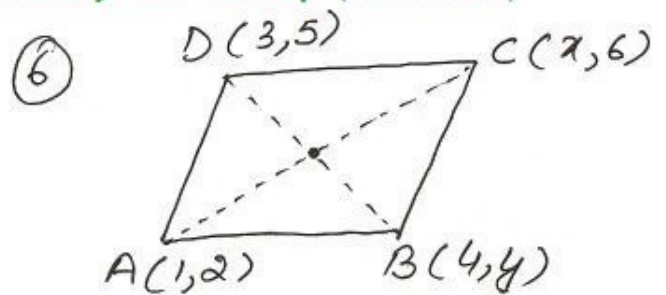
\therefore reqd. ratio = $1:1$

\Rightarrow P is midpt of AB

$$x = \frac{1+(-4)}{2}$$

$$= -\frac{3}{2}$$

\therefore coor. are $(-\frac{3}{2}, 0)$



\therefore diagonals of a \parallel gm bisect each other.

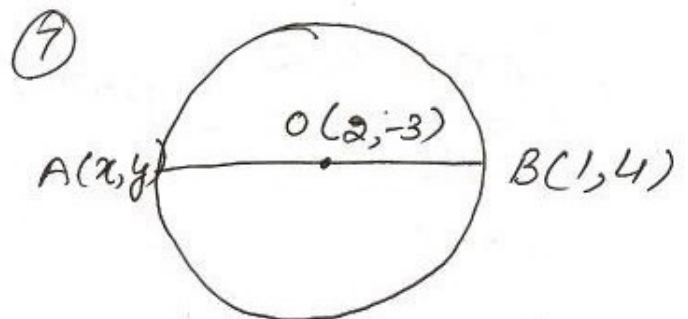
\therefore midpoints of AC and BD coincide.

$$\frac{1+x}{2} = \frac{3+4}{2}, \quad \frac{2+6}{2} = \frac{5+y}{2}$$

$$\Rightarrow x = 7-1 \quad \Rightarrow y = 8-5$$

$$\Rightarrow x = 6 \quad \Rightarrow y = 3$$

$$\therefore x = 6, y = 3$$



centre of circle is midpt. of diameter

$$\therefore 2 = \frac{x+1}{2}, \quad -3 = \frac{y+4}{2}$$

$$\Rightarrow x = 4-1 \quad y+4 = -6$$

$$\Rightarrow x = 3 \quad \Rightarrow y = -6-4 = -10$$

$$\therefore A(3, -10)$$