

DS9 - Interrogation.

A(2,3), B(7,6); C(-3,4); D(2,8)

① Equation de (AB)

$x_A \neq x_B$; $y_A \neq y_B$ donc (AB): $y = mx + p$ avec $m = \frac{y_B - y_A}{x_B - x_A} = \frac{3}{5}$

Donc (AB): $y = \frac{3}{5}x + p$

et $A(2,3) \in (AB) \Rightarrow 3 = \frac{3}{5} \times 2 + p$

$\Rightarrow p = 3 - \frac{6}{5} = \frac{9}{5}$ d'où (AB): $y = \frac{3}{5}x + \frac{9}{5}$

Equation de (CD)

$x_C \neq x_D$; $y_C \neq y_D$ donc (CD): $y = mx + p$ avec $m = \frac{y_D - y_C}{x_D - x_C} = \frac{4}{5}$

Donc (CD): $y = \frac{4}{5}x + p$ et $D(2,8) \in (CD) \Rightarrow 8 = \frac{4}{5} \times 2 + p$

$\Rightarrow p = 8 - \frac{8}{5} = \frac{32}{5}$

Equation de (AD)

$x_A = x_D = 2$ d'où (AD): $x = 2$

Donc (CD): $y = \frac{4}{5}x + \frac{32}{5}$

$$\textcircled{2} \cdot K(x,y) \in (AB) \cap (CD) \Leftrightarrow \begin{cases} y = \frac{3}{5}x + \frac{9}{5} \\ y = \frac{4}{5}x + \frac{32}{5} \end{cases} \Leftrightarrow \begin{cases} \frac{3}{5}x + \frac{9}{5} = \frac{4}{5}x + \frac{32}{5} \\ y = \frac{4}{5}x + \frac{32}{5} \end{cases}$$

③ $\Delta // (AB)$ donc $\Delta: y = \frac{3}{5}x + p$

et $P(8,-1) \in \Delta \Rightarrow -1 = \frac{3}{5} \times 8 + p$

$\Rightarrow p = -1 - \frac{24}{5} = -\frac{29}{5}$

d'où $\Delta: y = \frac{3}{5}x - \frac{29}{5}$

$$\Leftrightarrow \begin{cases} \frac{1}{5}x = -\frac{23}{5} \\ y = \frac{4}{5}x + \frac{32}{5} \end{cases}$$

$$\Leftrightarrow \begin{cases} x = -23 \\ y = \frac{4}{5} \times (-23) + \frac{32}{5} \end{cases}$$

$$\Leftrightarrow \begin{cases} x = -23 \\ y = -12 \end{cases}$$

Donc $K(-23, -12)$