

Ex 1

$$a) \begin{cases} 12 = 3 - 3k & \Leftrightarrow 9 = -3k & \Leftrightarrow k = -3 \\ 10 = -6 - 5k & \Leftrightarrow 16 = -5k & \Leftrightarrow k = -\frac{16}{5} \end{cases} \quad \begin{matrix} > \\ \neq \end{matrix} \Rightarrow \underline{\text{non.}}$$

$$b) \vec{d}_1 = \begin{pmatrix} -3 \\ -5 \end{pmatrix} \quad \text{et} \quad \vec{d}_2 = \begin{pmatrix} -5 \\ 3 \end{pmatrix}$$

$$d_1 \perp d_2 \quad \text{si} \quad \vec{d}_1 \cdot \vec{d}_2 = 0 : -3 \cdot (-5) + -5 \cdot 3 = +15 + 15 = 0 \checkmark \Rightarrow \underline{\text{oui}}$$

$$c) \begin{cases} x = 3 - 3k \\ y = -6 - 5k \\ 3x + 5y = 13 \end{cases} \quad \begin{matrix} \text{substit.} \\ \Rightarrow \end{matrix} \quad \begin{aligned} 3(3 - 3k) + 5(-6 - 5k) &= 13 \\ 9 - 9k - 30 - 25k &= 13 \end{aligned}$$

$$-34k = 34 \quad \Leftrightarrow \quad k = -1$$

dans 1^{re} et 2^e

$$\Rightarrow \begin{cases} x = 3 - 3(-1) = 6 \\ y = -6 - 5(-1) = -1 \end{cases} \Rightarrow \underline{I(6; -1)}$$

$$\text{Variante:} \quad d_1: \begin{cases} x = 3 - 3k \\ y = -6 - 5k \end{cases} \begin{matrix} 5 \\ -3 \end{matrix} \Rightarrow \begin{array}{r} 5x = 15 - 15k \\ + \quad -3y = 18 + 15k \\ \hline 5x - 3y = 33 \end{array}$$

$$\Rightarrow \begin{cases} 5x - 3y = 33 \\ 3x + 5y = 13 \end{cases} \begin{matrix} 5 \\ 3 \end{matrix} \Rightarrow \begin{array}{r} 25x - 15y = 165 \\ + \quad 9x + 15y = 39 \\ \hline 34x = 204 \\ x = 6 \end{array} \quad \begin{matrix} \xrightarrow{1^e} \\ \Rightarrow \end{matrix} \quad \begin{aligned} 5 \cdot 6 - 3y &= 33 \\ -3y &= 3 \\ y &= -1 \end{aligned}$$

$$d) \vec{d}_2 = \begin{pmatrix} -5 \\ 3 \end{pmatrix} \quad \text{et} \quad I(6; -1) \in d_2 \Rightarrow \underline{d_2: \begin{cases} x = 6 - 5l \\ y = -1 + 3l \end{cases}, l \in \mathbb{R}}$$

Ex2

$$a) \vec{AB} = \begin{pmatrix} 9+3 \\ 5-2 \end{pmatrix} = \begin{pmatrix} 12 \\ 3 \end{pmatrix} = 3 \begin{pmatrix} 4 \\ 1 \end{pmatrix} = \vec{d}_{(AB)}$$

$$\Rightarrow (AB): x-4y+C=0 \quad \left. \begin{array}{l} A(-3;2) \in (AB) \Rightarrow -3-8+C=0 \\ C=11 \end{array} \right\} \Rightarrow \underline{(AB): x-4y+11=0}$$

$$b) \vec{AC} = \begin{pmatrix} 5+3 \\ -3-2 \end{pmatrix} = \begin{pmatrix} 8 \\ -5 \end{pmatrix} = \vec{n}_{m_{AC}}$$

$$\Rightarrow m_{AC}: 8x-5y+C=0$$

$$M_{AC}\left(\frac{-3+5}{2}; \frac{2-3}{2}\right) = \left(1; -\frac{1}{2}\right) \in m_{AC} \Rightarrow 8+\frac{5}{2}+C=0 \\ C = -\frac{21}{2}$$

$$\Rightarrow m_{AC}: 8x-5y-\frac{21}{2}=0 \Leftrightarrow \underline{m_{AC}: 16x-10y-21=0}$$

Ex3

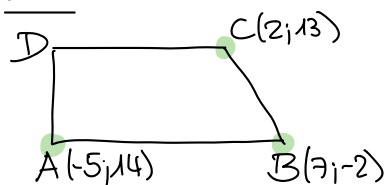
$$a) d: y = \frac{2}{3}x + h$$

$$D(1;1) \in d \Rightarrow 1 = \frac{2}{3} + h \Leftrightarrow h = 1 - \frac{2}{3} = \frac{1}{3}$$

$$\Rightarrow d: y = \frac{2}{3}x + \frac{1}{3} \Leftrightarrow 3y = 2x + 1 \Leftrightarrow \underline{2x-3y+1=0}$$

$$b) 9x+10y+5=0 \Leftrightarrow y = -\frac{9}{10}x - \frac{1}{2} \Rightarrow O \hat{=} O: \underline{-\frac{1}{2}}$$

Ex 4



$$\vec{AB} = \begin{pmatrix} 7+5 \\ -2-14 \end{pmatrix} = \begin{pmatrix} 12 \\ -16 \end{pmatrix} = 4 \begin{pmatrix} 3 \\ -4 \end{pmatrix} \sim \vec{d}_{(DC)} \quad \text{car } (DC) \parallel (AB)$$

$$\begin{aligned} \Rightarrow (DC) : -4x - 3y + C &= 0 \\ C \in (DC) \Rightarrow -8 - 39 + C &= 0 \\ C &= 47 \end{aligned} \quad \left. \vphantom{\begin{aligned} \Rightarrow (DC) : -4x - 3y + C &= 0 \\ C \in (DC) \Rightarrow -8 - 39 + C &= 0 \\ C &= 47 \end{aligned}} \right\} \Rightarrow (DC) : -4x - 3y + 47 = 0$$

$$\begin{aligned} (AD) \perp (DC) &\Rightarrow (AD) : 3x - 4y + C = 0 \\ A \in (AD) &\Rightarrow -15 - 56 + C = 0 \\ C &= 71 \end{aligned} \quad \left. \vphantom{\begin{aligned} (AD) \perp (DC) &\Rightarrow (AD) : 3x - 4y + C = 0 \\ A \in (AD) &\Rightarrow -15 - 56 + C = 0 \\ C &= 71 \end{aligned}} \right\} \Rightarrow (AD) : 3x - 4y + 71 = 0$$

$$\begin{aligned} \{D\} = (AD) \cap (DC) &\Rightarrow \begin{cases} -4x - 3y = -47 \\ 3x - 4y = -71 \end{cases} \begin{array}{l} 4 \\ -3 \end{array} \Rightarrow + \begin{array}{r} -16x - 12y = -188 \\ -9x + 12y = 213 \\ \hline -25x = 25 \\ x = -1 \end{array} \end{aligned}$$

$$\begin{aligned} x^c &\Rightarrow +4 - 3y = -47 \\ -3y &= -51 \\ y &= 17 \end{aligned}$$

$$\Rightarrow \underline{D(-1; 17)}$$