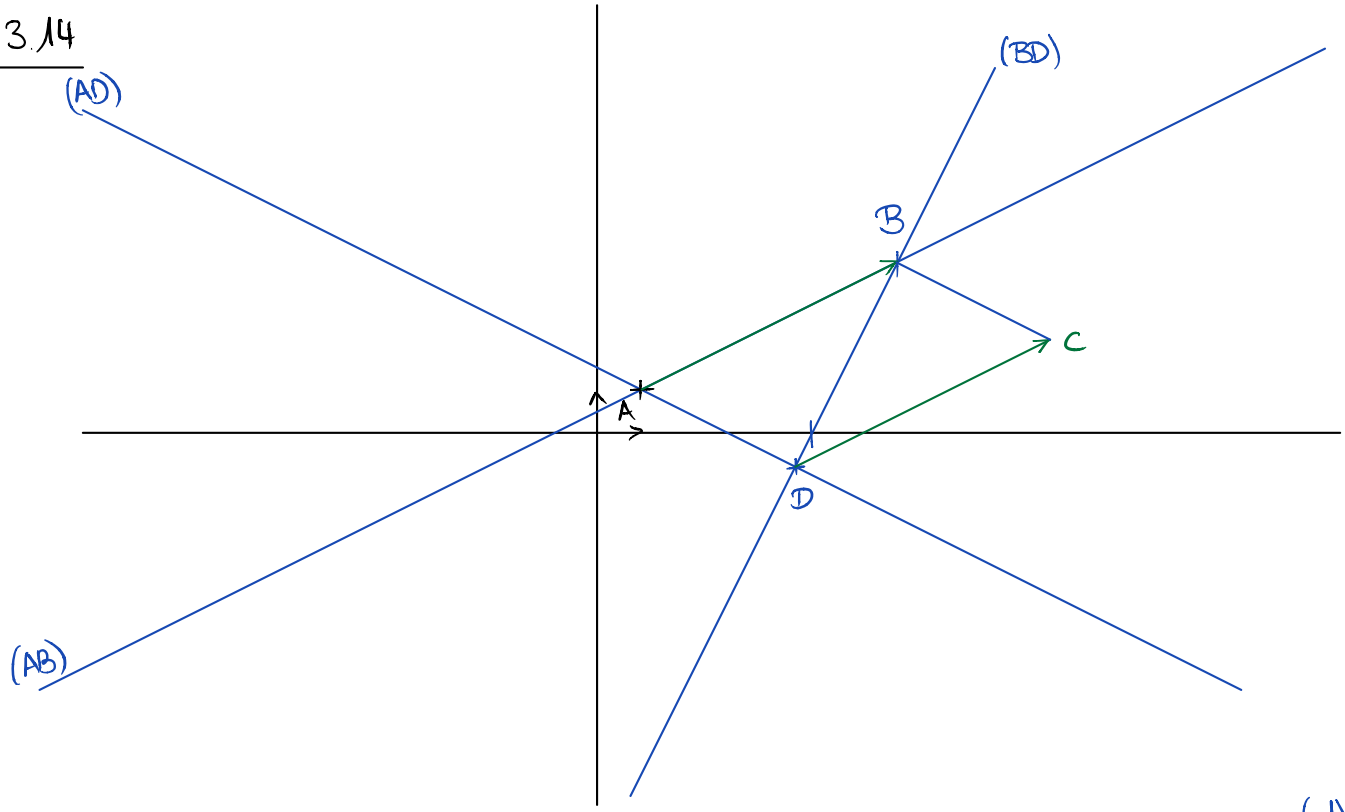
Ex 3.14

a)



(BD) : si $x=0 \Rightarrow y=-10$ et si $y=0 \Rightarrow x=5$ et $\vec{d}_{BD}=\begin{pmatrix}1\\2\end{pmatrix}$

b) $m_{AD}=-\frac{1}{2}=-\frac{a}{b} \Rightarrow (AD): x+2y+c=0$

$A(1;1)\in(AD) \Rightarrow 1+2+c=0 \Leftrightarrow c=-3$

$\Rightarrow (AD): \underline{x+2y-3=0}$

c) $\{B\}=(AB)\cap(BD)$:

$$\begin{cases} x=1+2k \\ y=1+k \\ 2x-y-10=0 \end{cases} \begin{matrix} \cdot 1 \\ \cdot(-2) \end{matrix} \Rightarrow \begin{cases} x-2y=-1 \\ 2x-y=10 \end{cases} \begin{matrix} \cdot(-1) \\ \cdot 2 \end{matrix}$$

$$\Rightarrow \begin{cases} x-2y=-1 \\ 3x=21 \end{cases} \Rightarrow \begin{cases} x=7 \\ y=\frac{7+1}{2}=4 \end{cases} \Rightarrow \underline{B(7;4)}$$

$\{D\}=(AD)\cap(BD)$:

$$\begin{cases} x+2y-3=0 \\ 2x-y-10=0 \end{cases} \begin{matrix} \cdot 1 \\ \cdot 2 \end{matrix} \begin{matrix} \cdot 2 \\ \cdot(-1) \end{matrix} \Rightarrow \begin{cases} 5x-23=0 \\ 5y+4=0 \end{cases}$$

$$\Rightarrow \begin{cases} x=\frac{23}{5} \\ y=-\frac{4}{5} \end{cases} \Rightarrow \underline{D\left(\frac{23}{5};-\frac{4}{5}\right)}$$

ABCD //-gramme $\Rightarrow$ $\vec{OC} = \vec{OD} + \vec{AB}$

$$= \begin{pmatrix} \frac{23}{5} \\ -\frac{4}{5} \end{pmatrix} + \begin{pmatrix} 7-1 \\ 4-1 \end{pmatrix} = \begin{pmatrix} \frac{23}{5} + 6 \\ -\frac{4}{5} + 3 \end{pmatrix} = \begin{pmatrix} \frac{53}{5} \\ \frac{11}{5} \end{pmatrix}$$

$\Rightarrow$ $D\left(\frac{53}{5} ; \frac{11}{5}\right)$