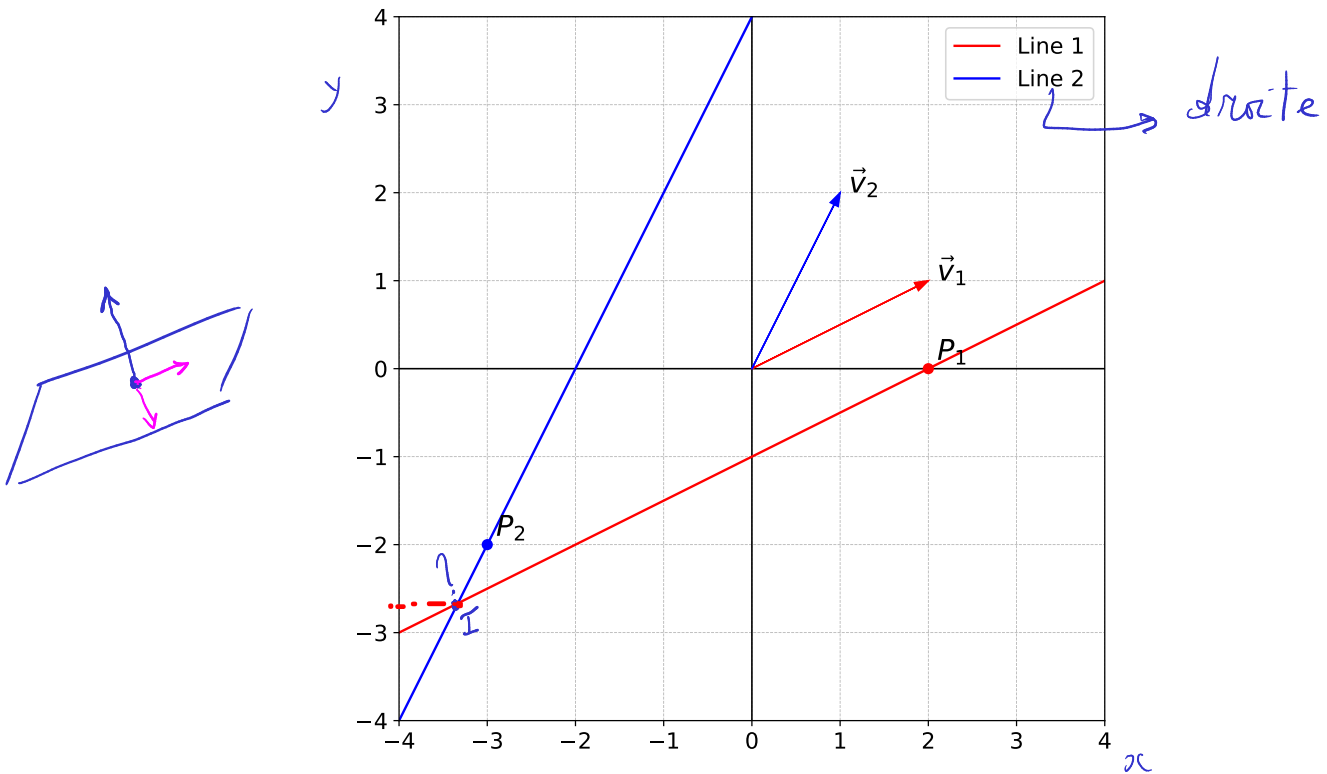


Intersection de deux droites

Calculate the point of intersection of the two lines shown below



Equation of line 1 $P_1(2, 0)$ $\vec{v}_1 = \begin{pmatrix} 2 \\ 1 \end{pmatrix}$
 Line 1 : $y - 0 = \frac{1}{2} \cdot (x - 2)$
 $y = \frac{1}{2}(x - 2)$

Equation of line 2 $P_2(-3, -2)$ $\vec{v}_2 = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$
 Line 2 : $y + 2 = \frac{2}{1} \cdot (x + 3)$
 $y = 2(x + 3) - 2$

Intersection calculation :

Pour I, les valeurs de y sont les mêmes

point of intersection $\Rightarrow \frac{1}{2}(x_I - 2) = [2 \cdot (x_I + 3) - 2]$ en I

$$x - 2 = 4 \cdot (x + 3) - 4$$

$$x - 2 = 4x + 12 - 4 \quad \text{distributivité}$$

$$-3x = 10 \Rightarrow x_I = -\frac{10}{3}$$

Je choisis une équation d'une droite et
j'y remplace x par $-\frac{10}{3}$, ainsi j'obtiendrai
 y_I I'll get

$$y_I = 2 \cdot \left(-\frac{10}{3} + 3\right) - 2$$

$$y_I = 2 \cdot \left(-\frac{10}{3} + \frac{9}{3}\right) - 2$$

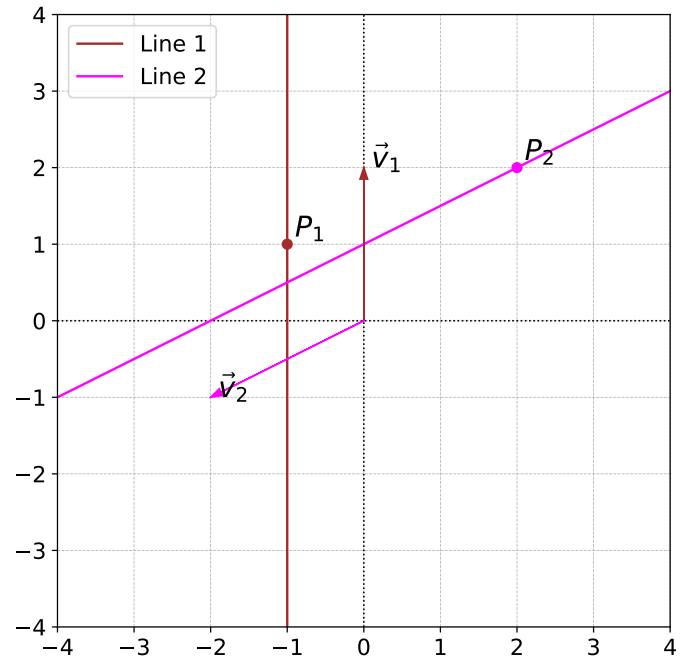
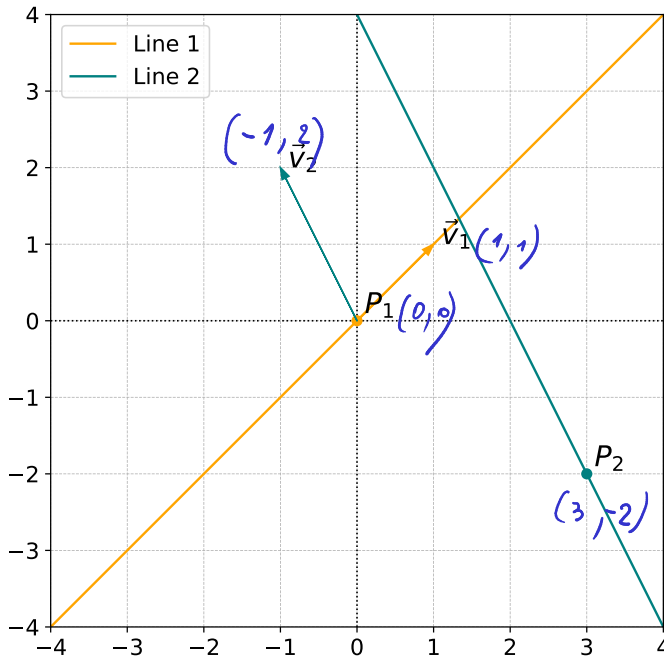
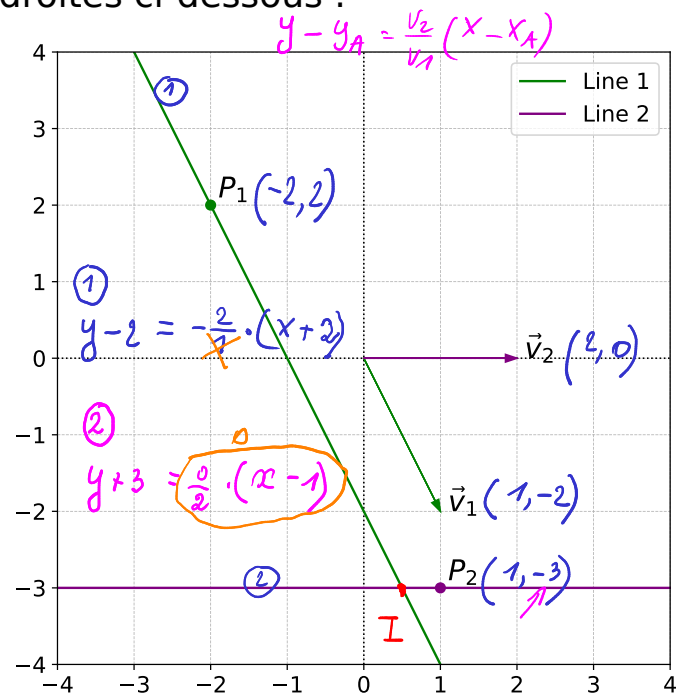
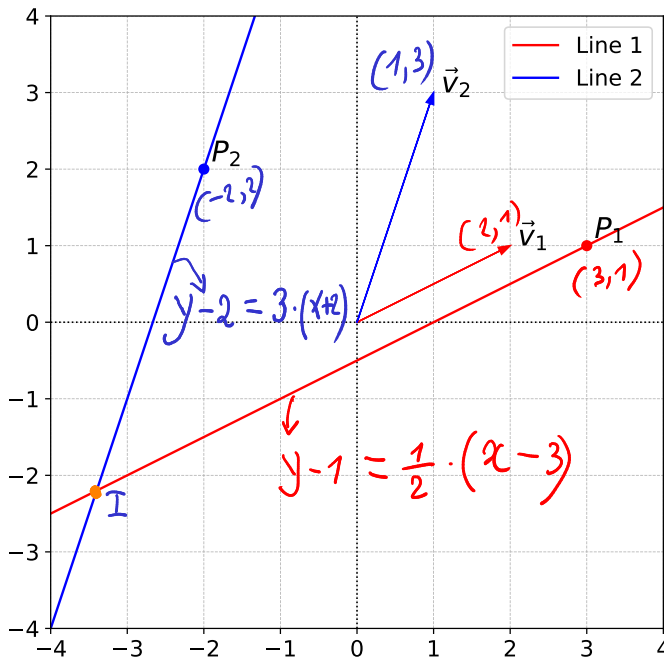
$$= 2 \cdot \left(-\frac{1}{3}\right) - 2$$

$$= -\frac{2}{3} - \frac{6}{3} = -\frac{8}{3}$$

Conclusion

$$I = \left(-\frac{10}{3}, -\frac{8}{3}\right)$$

Calcule les points d'intersections des droites ci-dessous :



dessin 1

$$\begin{aligned}
 & y-2=3(x+2); \quad y-1=\frac{1}{2}(x-3) \\
 \text{en I: } & \underbrace{3 \cdot (x+2) + 2}_{y_I} = \underbrace{\frac{1}{2}(x-3) + 1}_{y_I} \\
 & 6(x+2) + 4 = (x-3) + 2 \\
 \Leftrightarrow & 6x + 12 + 4 = x - 3 + 2 \\
 \Leftrightarrow & 5x = -17
 \end{aligned}$$

$$\Leftrightarrow x_I = -\frac{17}{5} \quad y_I = 3 \cdot \left(-\frac{17}{5} + 2\right) + 2 = -\frac{11}{5}$$

Conclusion : $I\left(-\frac{17}{5}, -\frac{11}{5}\right)$ est l'intersection des 2 droites.

figure 2 : ① $y - 2 = -2 \cdot (x + 2) \Rightarrow y = -2 \cdot (x + 2) + 2$

② $y + 3 = 0 \Rightarrow y = -3$

on I : $\underbrace{-2 \cdot (x + 2) + 2}_{-2} = \underbrace{-3}$

$\Leftrightarrow -2x - 4 + 2 = -3$

$\Leftrightarrow -2x = -3 + 2$

$\Leftrightarrow -2x = -1$

$\downarrow : (-2) \quad \downarrow : (-2)$
 $x = \frac{-1}{-2}$

$x = \frac{1}{2}$

Conclusion : $I\left(\frac{1}{2}, -3\right)$