$E, F \overset{sev}{\subseteq} \mathbb{R}^n$

supplémentaire si

$$\begin{cases} * \quad E \cap F = \{0\} \\ * \quad E + F = \mathbb{R}^n \end{cases}$$

libre

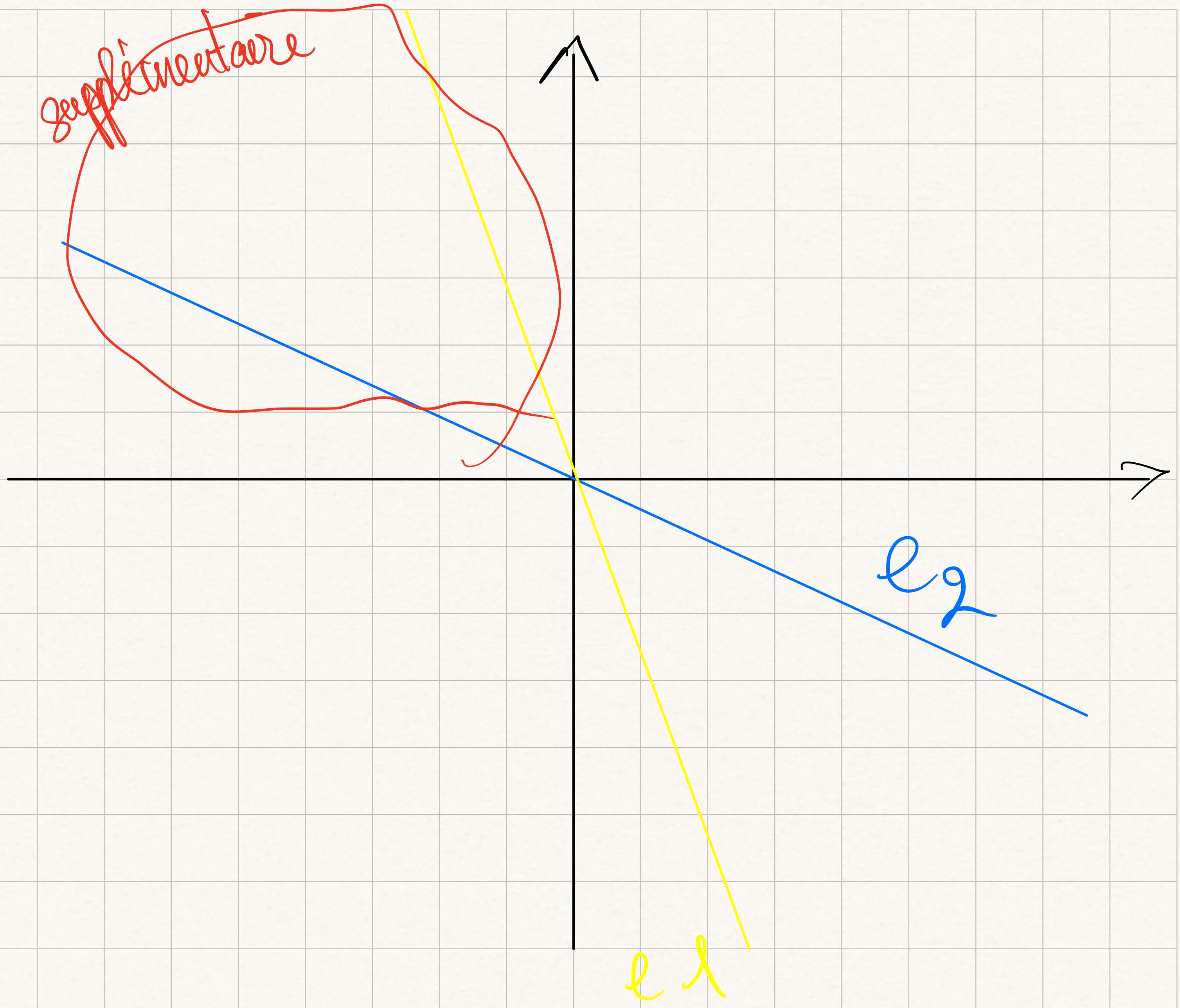
générateur

$$\begin{cases} E \cap F = \{0\} \\ \dim E + \dim F = n \end{cases}$$

ou

$$\begin{cases} E + F = \mathbb{R}^n \\ \dim E + \dim F = n \end{cases}$$

ou



supplémentaire
e2
e1

$$\cosh(x) + \sinh(x) = e^{x}$$

Remarque

Ex 1

$$\ln(1 + 2x^3) - (1 - \cos(2x))\sin(x)$$

$$= 2x^3 + o(x^3) - \frac{(2x)^2}{2} x + o(x^3)$$

$$= 0 + o(x^3) \checkmark$$

$$x\underbrace{(e^{x^2} - 1)}_{x^2} \underset{0}{\sim} x^3$$

$$\underset{0}{=} x^3 + o(x^3$$

$$= \frac{o(x^3)}{x^3 + o(x^3)} \xrightarrow{\text{tend vers}} 0$$

$$\frac{o(1)}{1 + o(1)} \longrightarrow 0$$

$$(1+x)\left(-x+o(x)\right)+x$$

$$=-x-x^2+o(x)+x$$

$$=-x^2+o(x)=o(x)$$

$$(1+x)\ln(1-x)+x=(1+x)\left(-x-\frac{x^2}{2}+o(x^2)\right)+x$$

$$=-x-\frac{x^2}{2}+o(x^2)-x^2+x$$

$$=\frac{-3}{2}x^2+o(x^2)$$