Fol

$$1y \lim_{x\to 70} \frac{2(1-\cos(x))\sqrt{1+x} - x(\ln(1+x))}{\sin(x) - x}$$

 $1\sin(x) - x$
 $1\cos(x) = 1 - \frac{x^2}{2} + \frac{x^4}{24} + o(x^5)$
 $1-\cos(x) = \frac{x^2}{2} - \frac{x^4}{24} + o(x^5)$
 $2(1-\cos(x)) = x^2 - \frac{x^2}{2} + \frac{x^3}{16} + o(x^3)$
 $2(1-\cos(x)) = x - \frac{x^2}{2} + \frac{x^3}{3} + o(x^3)$
 $2(1-\cos(x)) = x - \frac{x^2}{2} + \frac{x^3}{3} + o(x^3)$
 $2(1-\cos(x)) = x - \frac{x^2}{2} + \frac{x^3}{3} + o(x^3)$
 $2(1-\cos(x)) = x - \frac{x^2}{2} + \frac{x^3}{3} + o(x^3)$
 $2(1-\cos(x)) = x - \frac{x^2}{2} + o(x^5)$

$$2y \lim_{190} x - x^{2} \ln \left(1 + \frac{1}{x}\right)$$

$$\ln \left(1 + x\right) = x - \frac{x^{2}}{2} \cdot \frac{x^{3}}{3} + o(x^{3})$$

$$\ln \left(1 + \frac{1}{x}\right) = \frac{1}{x} - \frac{1}{2x^{2}} + \frac{1}{3x^{3}} + o(\frac{1}{x})$$

$$x^{2} \ln \left(1 + \frac{1}{x}\right) = x - \frac{1}{2} + \frac{1}{3x} + o(\frac{1}{x})$$

$$= x - \frac{1}{2} + o(x)$$

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

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

$$= \lim_{x \to x} x - x + \frac{1}{2} + o(x)$$

$$\frac{3}{4} y \lim_{n \to \infty} n^{3} \frac{\cos(\frac{1}{n}) - 1}{\sqrt{n^{2} + 2n}}$$

$$= \lim_{n \to \infty} n^{3} \frac{\cos(\frac{1}{n}) - 1}{\sqrt{n} \sqrt{1 + 2n}}$$

$$= \lim_{n \to \infty} n^{2} \frac{\cos(\frac{1}{n}) - 1}{\sqrt{1 + 2n}}$$

$$= \lim_{n \to \infty} n^{2} \frac{\cos(\frac{1}{n}) - 1}{\sqrt{1 + 2n}}$$

$$\cos(\frac{1}{n}) = \frac{1}{2n^{2}} + \frac{2}{24n^{4}} + o(x^{5})$$

$$\cos(\frac{1}{n}) - 1 = \frac{1}{2n^{2}} + \frac{1}{24n^{4}} + o(x^{5})$$

$$\sqrt{1 + 2n} = 1 + \frac{2n}{2} - \frac{2n^{2}}{8} + o(x^{2})$$

$$(1+x)^{3} = 1 + 3x + \frac{3(3-1)}{2}x^{2} + 3(x^{2})$$

$$(1+x)^{\frac{1}{3}} = 1 + \frac{1}{3}x + \frac{1}{3}(\frac{1}{3}-1)x^{2} + 3(x^{2})$$

$$= 1 + \frac{1}{3}x - \frac{1}{3}x^{2} + 3(x^{2})$$

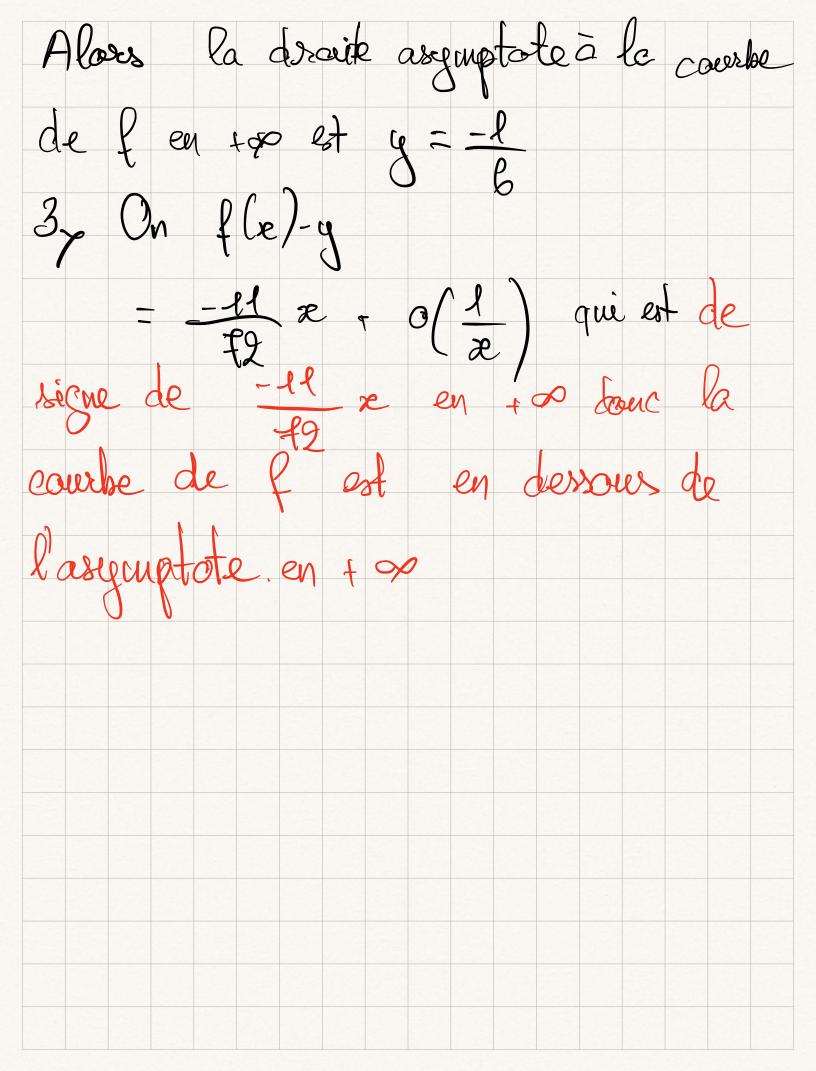
$$(1+\frac{1}{3}+\frac{1}{3})^{\frac{1}{3}} = 1 + \frac{1}{3}(\frac{1}{2}+\frac{1}{2}) - \frac{1}{3}(\frac{1}{2}+\frac{1}{2})^{\frac{1}{2}}(\frac{1}{2}+\frac{1}{2})$$

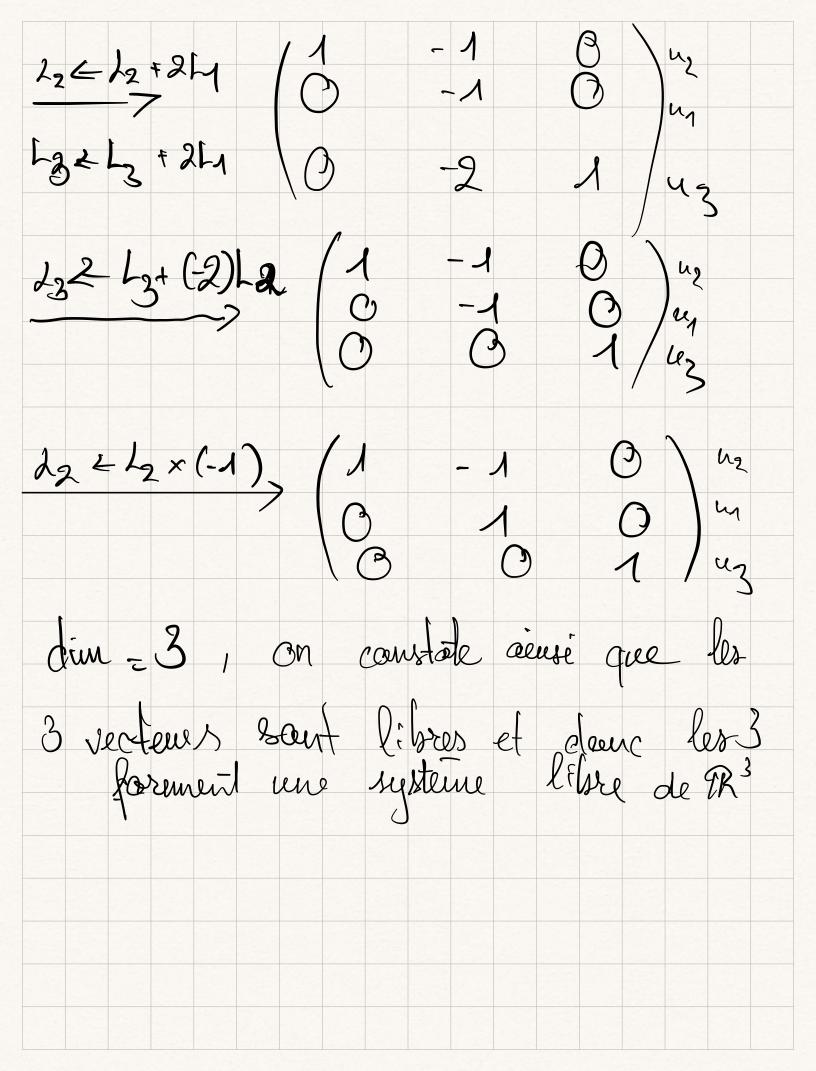
$$= 1 + \frac{1}{3}x + \frac{1}{3}x^{2} - \frac{1}{3}x^{2} + 3(x^{2})$$

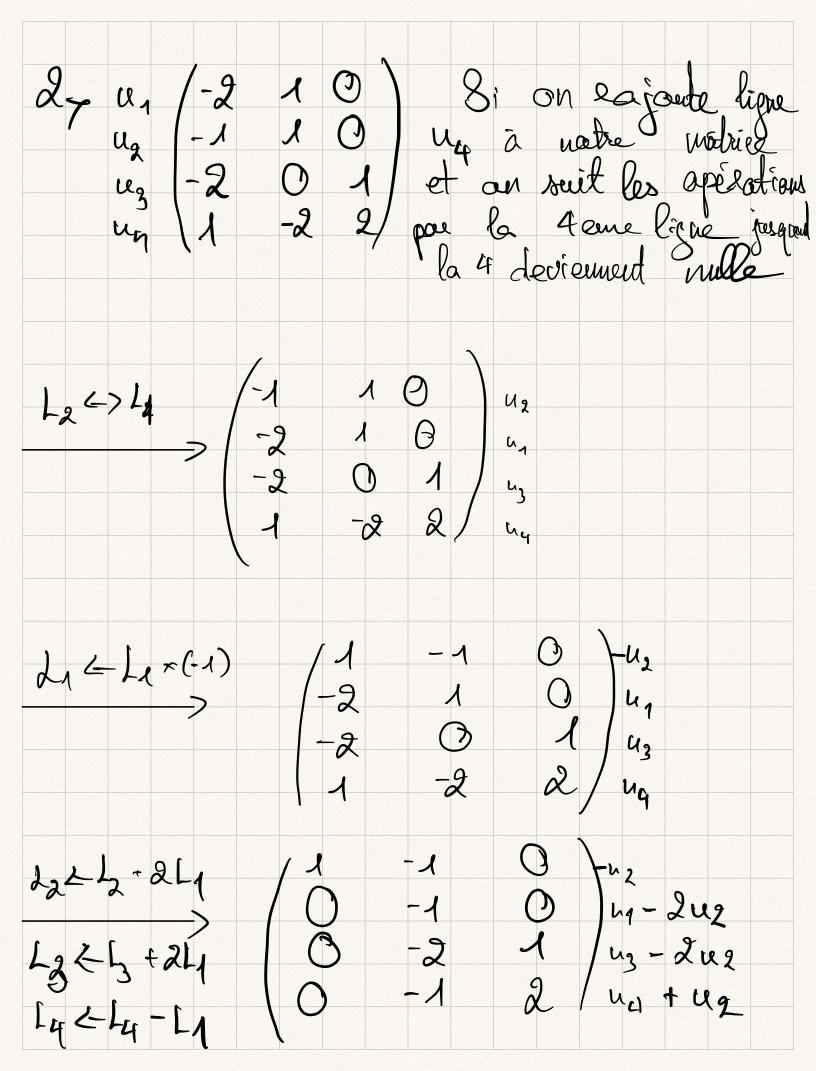
$$= 1 + \frac{1}{3}x + \frac{1}{3}x^{2} - \frac{1}{3}x^{2} + 3(x^{2})$$

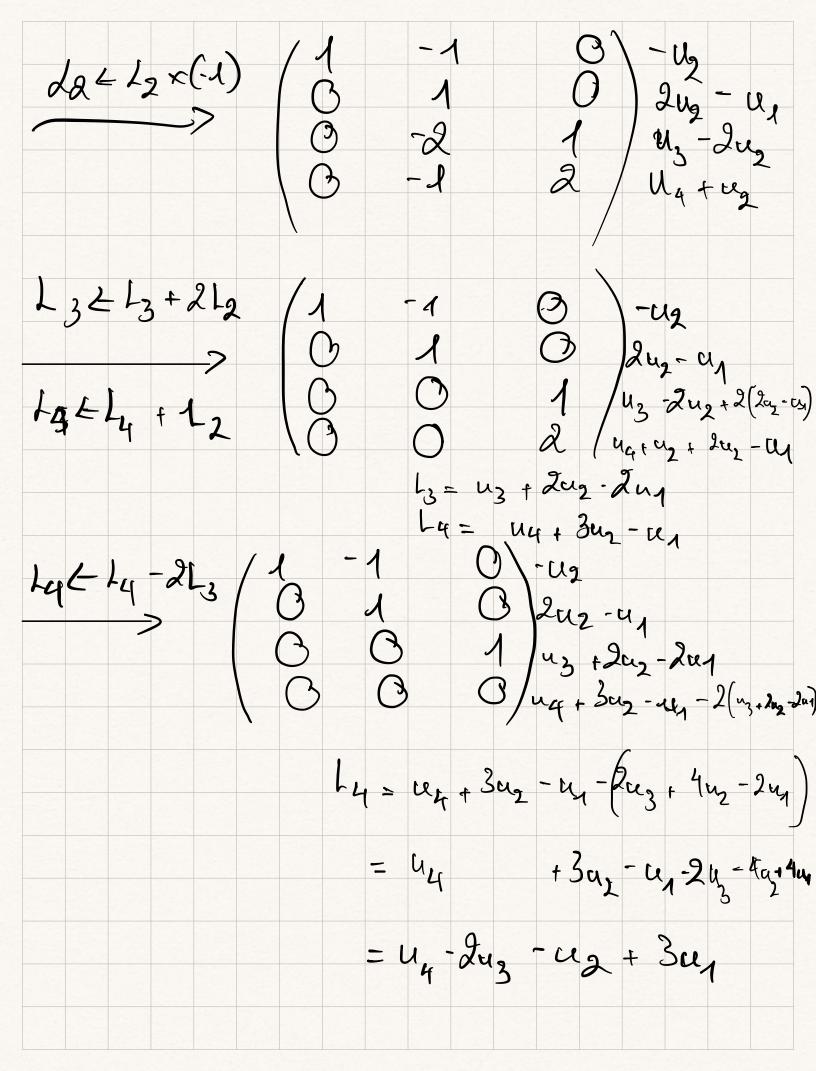
$$= 1 + \frac{1}{3}x + \frac{1}{3}x^{2} - \frac{1}{3}x^{2} + 3(x^{2})$$

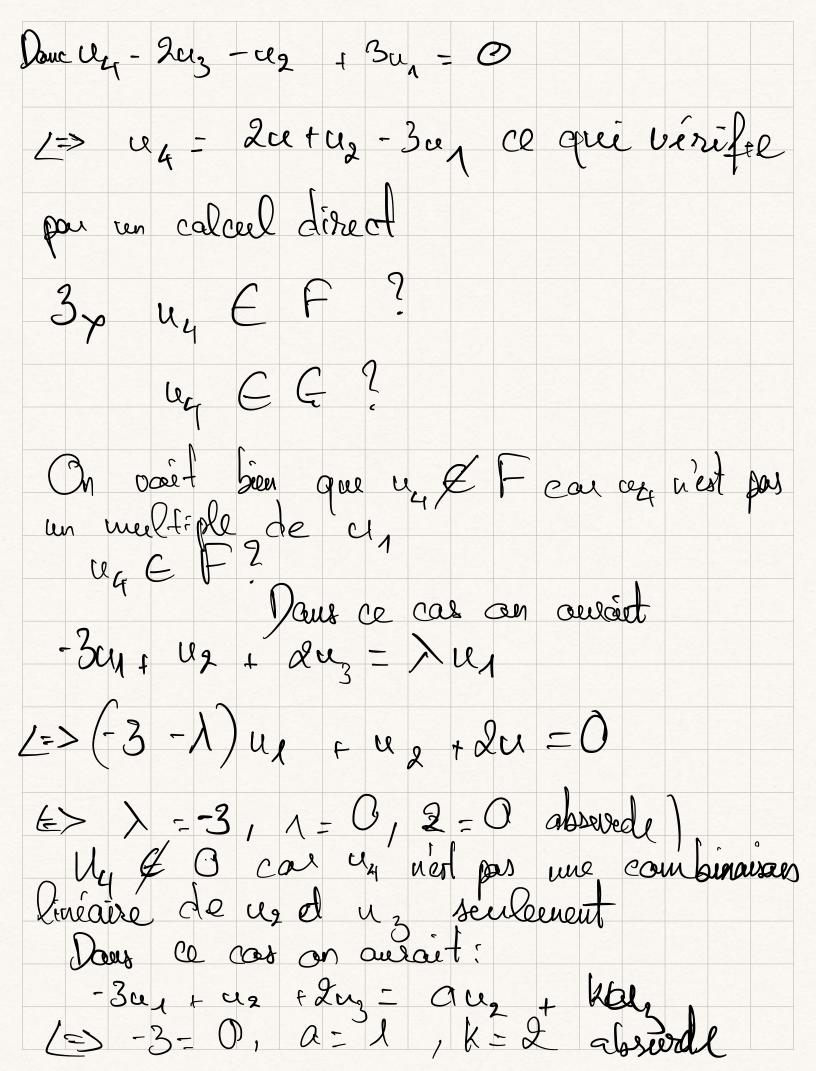
$$\begin{pmatrix}
\ell_{+} & \frac{1}{x} & \frac{1}{x^{2}} \\
\frac{1}{x} & \frac{1}{x^{2}} & \frac{1}{x^{2}} & \frac{1}{x^{2}} & \frac{1}{x^{2}} & \frac{1}{x^{2}} \\
\frac{1}{x} & \frac{1}{x^{2}} & \frac{1}{x^{2}} & \frac{1}{x^{2}} & \frac{1}{x^{2}} & \frac{1}{x^{2}} \\
\frac{1}{x^{2}} & \frac{1}{x^{2}} \\
\frac{1}{x^{2}} & \frac$$











Apturque (a, u, u, u) est un sextiene libre maximal, il forme une base de 123 des coordonnees des vecteurs 01, 02/ 03 dannés dans cette base sont: Un = Un Fug v2 = u2 - u2 Vz = Uz + Uz