On a
$$\sqrt{1+x^3}$$

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

$$\frac{\left(1+2e\right)^{d}-1+92e+9(\alpha-1)e}{2}$$

$$+\frac{d(\alpha-1)(\alpha-2)}{6}e^{2}+0(2e^{2})$$

$$=1+\frac{1}{2}e^3+0(2^3)$$

$$\frac{\sin(x)-x-\frac{2e^3}{6}}{6}+\frac{x^5}{120}+o(x^6)$$

2 7 9

$$sin(x)-x-\frac{2}{6}+o(x)$$

Alors

$$= \frac{2}{2} \left(1 + \frac{1}{2} x^{2} \right) + O(x) - \left(2 - \frac{x^{2}}{6} + O(x^{2}) \right)$$

$$\frac{2^{3}}{2^{4}} + o(2^{4}) - (2^{4}) + o(2^{4})$$

$$=\frac{+x^3}{b}+\frac{x^4}{2}+o(x^4)$$

$$= \left[\frac{7 + 3e^3}{6} + \frac{24}{2} + o(e^4)\right] \times \frac{1}{2e^3}$$

 $\frac{1}{2} + \varepsilon(z)$ avec ling Eat-0 Danc lieur 2 1/1 + 2e3- sien(se)
2e3 $2 - \lim_{x \to 0} \left(\frac{1}{\ln(1-x)} + \frac{1}{x} \right)$ $\ln\left(1=3e\right)=-x+\frac{3e^2}{2}-\frac{2^3}{3}+6(e^3)$ $\frac{1}{\ln(1-r)} + \frac{1}{2}$

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

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

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

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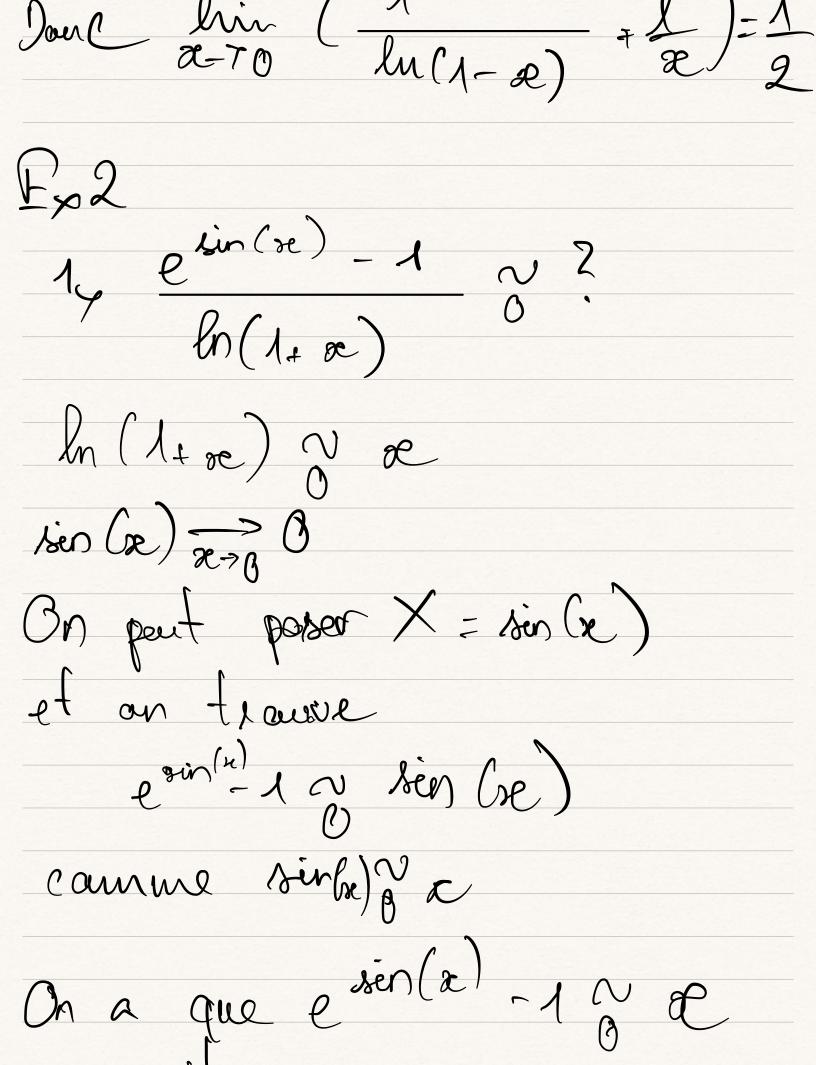
$$\frac{1}{2} = 1 - x^2 + x^2 - x^3 + o(x^3)$$

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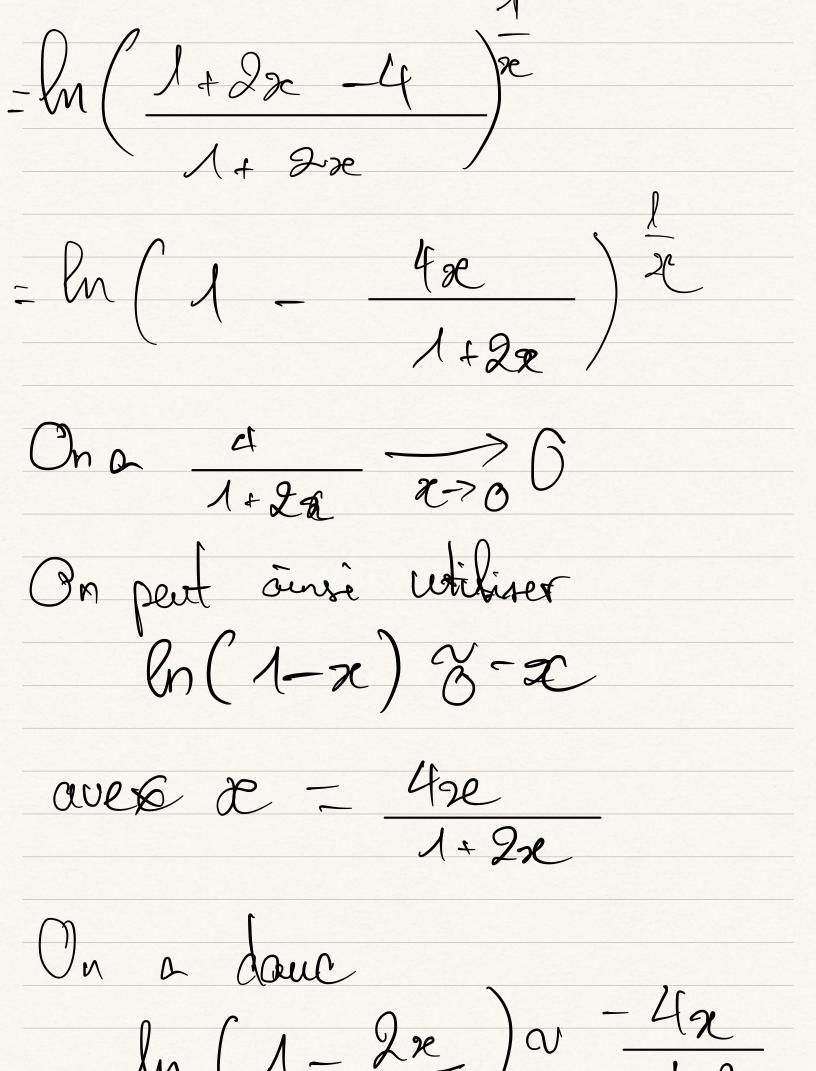
$$\frac{1}{2} = 1 - x^2 + x^2$$



On soit aussi que lu(1+2) ~ 2 esin (se) — 1 ~ 2 = 1

ln (lex) 0 x 2r $\left(\frac{1-2\pi}{1+2\pi}\right)^{\frac{1}{\pi}}$ 0 $\frac{2}{-1}$ Or M (1-291) = Donner Sous farme M(1+x)xx

A



) VV C 1+220 0 1-22 (m ٨

$$11+2e = 1+2e + o(x^3)$$

$$\frac{1}{2} = 1 - 2\ell + 2^2 - 2\ell + 0(2)$$

$$\sqrt{1+4x^2} = 1 + \frac{4x^2}{2} + o(x^2)$$

Par cause event

$$\frac{1}{1+2\pi} = 1-2\pi + o(\pi)$$
Par cause event

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

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

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

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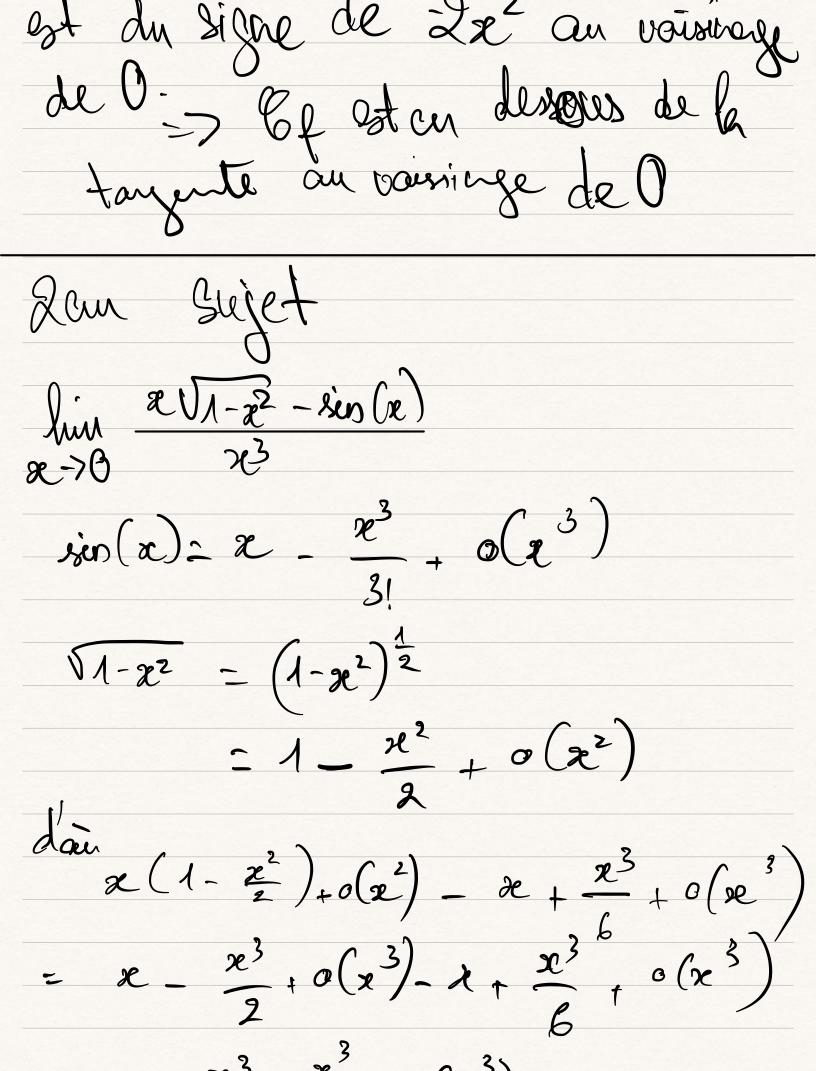
$$\frac{1}{2\pi} = 2\pi + o(\pi)$$

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

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

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

$$\frac{1}{2\pi}$$



$$\frac{-\frac{2}{2} + \frac{2}{6} + o(2)}{2^{2}}$$

$$\frac{-\frac{1}{2} + \frac{1}{6} + \mathcal{E}(2)}{2^{2}}$$

$$\frac{-\frac{1}{2} + \frac{1}{6} + \mathcal{E}(2)}{2^{2}}$$

$$\lim_{z \to 0} \mathcal{E}(2) = 0$$

$$\lim_{z \to 0} \frac{20_{1-x^{2}} - \mu(2)}{2^{2}} = \frac{-1}{3}$$

$$\lim_{z \to 0} \frac{1}{x^{2}} - \frac{1}{2} = \frac{2}{2}$$

$$\lim_{z \to 0} (1 + z^{2}) = z^{2} - \frac{z^{4}}{2} + o(z^{4})$$

$$\lim_{z \to 0} (1 + z^{2}) = z^{2} - \frac{z^{4}}{2} + o(z^{4})$$

-1

$$\frac{x^{2}}{1 - \frac{z^{2}}{2} \cdot o(x^{2})}$$

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

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

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$$= \frac{1}{2^{2}} \left(-1$$

en (1+2e) of I was Isin(æ) —> 0
2->0

On peut poser que X=2sinbe)

pour abtenir e^{26inOse} -1 N 2sinbe) 2sin(se) 22e $\ln \left(1+2e\right) \sim 2e$ $= \frac{e^{2\sin(5e)} - 1}{\ln(1+2e)} = \frac{22e}{2} = 2$ 2 - 22 3 + 23e 3 + 23eeln(x)

$$\ln(e^{2}) = 2$$

$$\ln(e^{2}) = 2$$

$$\ln(h^{2}) = e^{2}$$

$$\ln(h^{2}) = 2$$

 $\frac{-4\pi}{1+2\pi} \times \frac{1}{2\pi} = \frac{-2}{1+2\pi} \times \frac{0}{2}$

lim e Zze jeu ve