TD Serie :

ex 1 :

1) $f_1(x) = \dfrac{x}{\sqrt{1+x^2} - \sqrt{1+x}}$

$\Rightarrow \sqrt{1+x^2} - \sqrt{1+x} \neq 0$.

x should not be 0 or 1

$\Rightarrow x$ should not be $< -1 \Leftarrow$

$\Leftrightarrow Df_1 = \{]-1 ; +\infty[\setminus (0, 1) \}$

$\left(Df_1 = \{]-1 ; 0[\cup]0 ; 1[\cup]1 ; +\infty[\setminus (0, 1) \} \right.$

2) $f_2(x) = \ln(1+x^3) + x - 1$.

$Df_2 = \{]-1 ; +\infty[\}$

3) $f_3(x) = \dfrac{\ln(x)}{E(x^2) - 4}$ $) \leftarrow 0$.

$\Leftrightarrow x$ doit être $\neq 2$.

$\Leftrightarrow Df_3 = \{]0 ; +\infty[\setminus (2, -2) \}$

$$f_4(x) = \sqrt{|x+2| - |2x-4|}$$

$$\iff |x+2| - |2x-4| \geq 0 .$$

$$\iff |x+2| = |2x-4|$$

$$\iff x+2 = 2x-4$$

$$\iff x = 2x-4-2$$

$$\iff x = 2x-6$$

$$\lim_{0} \frac{x - \ln(1+x)}{x}$$

$$\iff x\left(1 - \frac{\ln(1+x)}{x}\right)$$

Les primitives :

I - $\boxed{\int x^n = \frac{x^{n+1}}{n+1}}$

ex :

- $f(x) = 5x^4$, $F(x) = \frac{5x^5}{5} = x^5$. To verify the process.
- $f(x) = x^3 - 2x$,

  $F(x) = \frac{x^4}{4} - x^2 + C$.
- $f(x) = 5x - 3 = \frac{5}{2}x^2 - 3x$.

II $\boxed{\int \frac{1}{x^2} = \frac{-1}{x}}$

1) $f(x) = \frac{-3}{x^2}$, $F(x) = \frac{3}{x}$

2) $f(x) = \frac{5}{x^2} \Rightarrow F(x) = \left(5 \cdot \frac{1}{x^2}\right)$prim,

$$F(x) = -\frac{5}{x}$$

3) $f(x) = 4x - \frac{1}{x^2} \Rightarrow F(x) = \frac{4x^2}{2} + \frac{1}{x}$

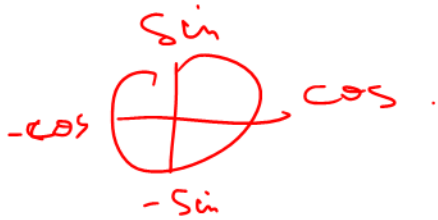
$$= 2x^2 + \frac{1}{x}$$

Integrale :

I) Integration par partie :

Soit La formule suivante :

$$A = \int \underbrace{x}_{v} \, \underbrace{\sin(x)}_{u'} \, dx$$



$$V = x^{a} \qquad V' = 1^{b}$$

$$U' = \sin(x)^{d} \qquad U = -\cos^{c}$$

$$A = a \cdot c - \int b \cdot c \, dx$$

$$\Rightarrow A = -x\cos(x) - \int -\cos(x)\, dx$$

$$= -x\cos(x) + \int \cos(x)\, dx$$

$$= -x\cos(x) + \sin(x) + C$$

$$\boxed{C \Rightarrow \text{constante}}$$