4.2.9 à 4.2.11

4.2.14 à 4.2.28

26/10/2026 Explog

$\boxed{4.2.9}$

β) $f(x) = \dfrac{2^x}{x}$

$D_f = \mathbb{R}^* = \mathbb{R} - \{0\}$

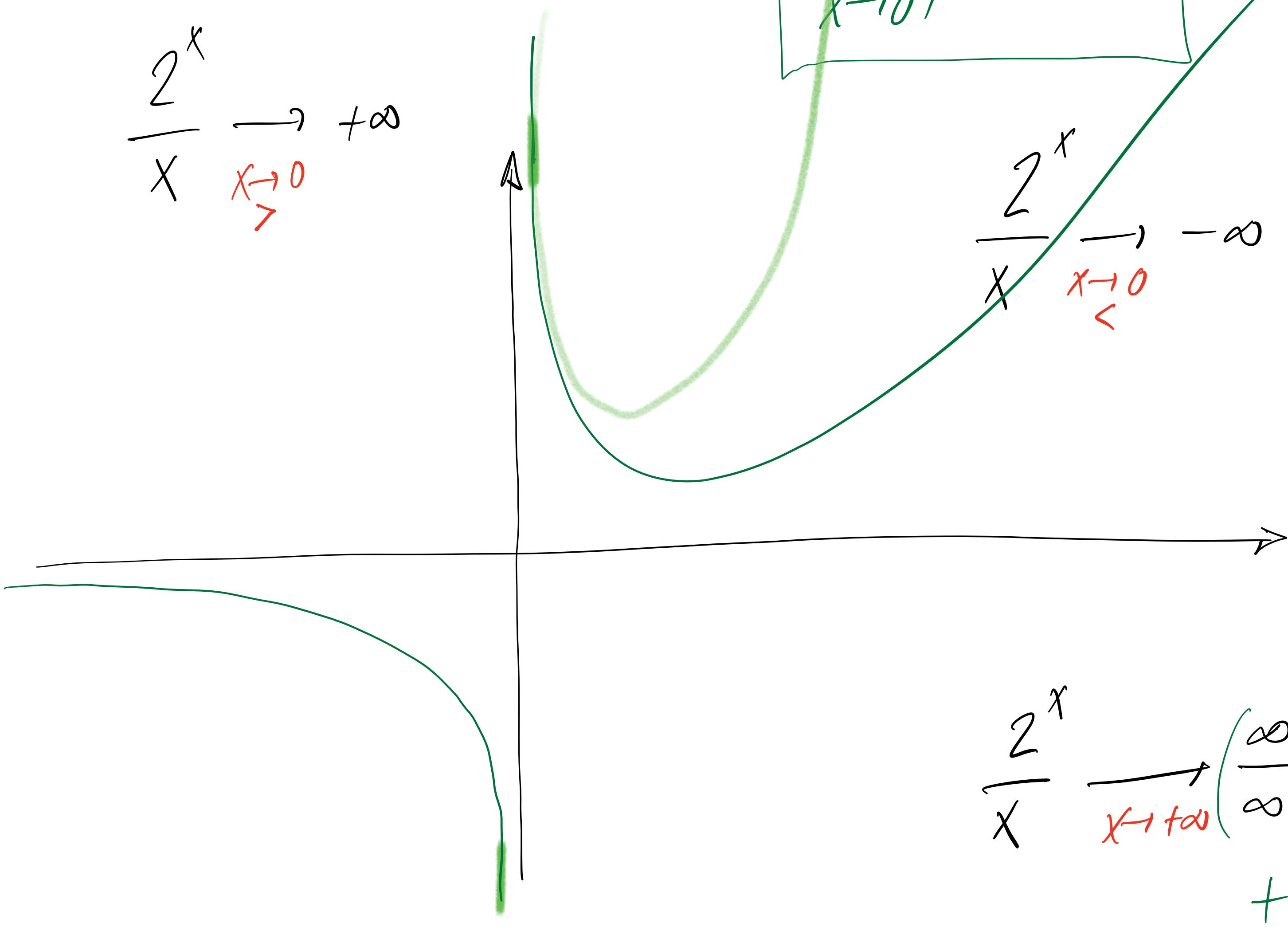
«$f(0) = \dfrac{2^0}{0} = \dfrac{1}{0}$»

$\uparrow$

$+\infty$

$$\boxed{\lim_{x\to 0} f(x) = \infty}$$

$$\frac{2^x}{x} \xrightarrow[x \to 0^{+}]{} +\infty$$



$$\frac{2^x}{x} \xrightarrow[x \to 0^{-}]{} -\infty$$

$$\frac{2^x}{x} \xrightarrow[x \to +\infty]{} \left(\frac{\infty}{\infty} \ \underline{\underline{\text{INΔ}}}\right)$$

$+\infty$

$$\boxed{f(x) = e^{g(x)} \qquad D_f = D_g}$$

Exemple : $f(x) = e^{\frac{1}{x}}$ $\quad D_f = \mathbb{R}^* = \mathbb{R} - \{0\}$

$g(x) = \frac{1}{x}$ $\quad D_f = D_g = \mathbb{R}^*$

$$h(x) = e^{\sqrt{1-x^2}}$$

$D_h = D_g$ où $g(x) = \sqrt{1-x^2}$

Signe $1-x^2$:

x		-1		1	
$1-x^2$	$-$	0	$+$	0	$-$

$D_g = [-1;1] \Rightarrow D_h = [-1;1]$

$$f(x) = \ln(g(x))$$

D_f : Signe de $g(x)$ car $\ln(g(x))$ existe

$\Leftrightarrow \; g(x) > 0$

Exemple: $\ln(1-x^2) = f(x)$

x		-1		1	
	$-$	0	$+$	0	$-$

$1-x^2 > 0$

$\Leftrightarrow \; x \in]-1;1[$

$\Rightarrow \; D_f =]-1;1[$