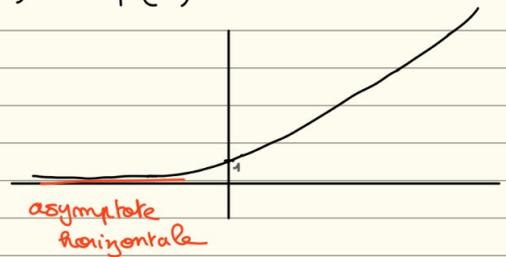


Exponentielle

Soit \exp la fonction exponentielle $\exp'(x) = \exp(x)$ $\exp(0) = 1$

- $D = \mathbb{R}$
 - $D' = \mathbb{R}$
 - $A = \mathbb{R}_*^+$
- $\lim_{x \rightarrow +\infty} \exp(x) = +\infty$
 $\lim_{x \rightarrow -\infty} \exp(x) = 0$

x	$-\infty$	$+\infty$
\exp	0	$+\infty$

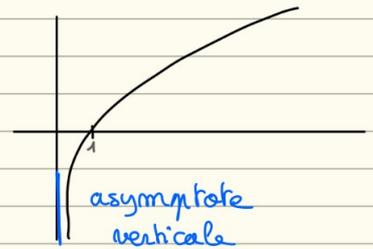


Logarithme

Soit \ln la fonction logarithme népérien $\ln'(x) = \frac{1}{x}$

- $D = \mathbb{R}_*^+$
 - $D' = \mathbb{R}_*^+$
 - $A = \mathbb{R}$
- $\lim_{x \rightarrow +\infty} \ln(x) = +\infty$
 $\lim_{x \rightarrow 0^+} \ln(x) = -\infty$

x	0	$+\infty$
\ln	$-\infty$	$+\infty$



Fonction Puissance

Pour $\alpha \in \mathbb{R}$, on note $p: x \mapsto x^\alpha$
 ou $x^\alpha = \exp(\alpha \ln(x))$

- $D = \mathbb{R}_*^+$
 - $D' = \mathbb{R}_*^+$
 - $A = \mathbb{R}_*^+$
- $\lim_{x \rightarrow +\infty} p_\alpha(x) = \begin{cases} +\infty & \text{si } \alpha > 0 \\ 0 & \text{si } \alpha < 0 \end{cases}$
 $\lim_{x \rightarrow -\infty} p_\alpha(x) = \begin{cases} 0 & \text{si } \alpha > 0 \\ +\infty & \text{si } \alpha < 0 \end{cases}$

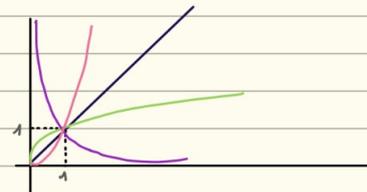
Si $\alpha > 0$

x	0	$+\infty$
p_α	0	$+\infty$

Si $\alpha < 0$

x	0	$+\infty$
p_α	$+\infty$	0

- $\alpha > 1$
 $x \mapsto x^2$
- $\alpha < 0$
 $x \mapsto x^{-1} = \frac{1}{x}$
- $\alpha = 1$ $x \mapsto x$
- $0 < \alpha < 1$
 $x \mapsto x^{1/2} = \sqrt{x}$

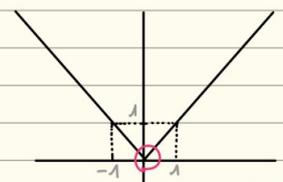


Valeur absolue

Soit $f: x \mapsto |x|$ $f'(x) = \begin{cases} 1 & \text{si } x > 0 \\ -1 & \text{si } x < 0 \end{cases}$ **fest pair**

- $D = \mathbb{R}$
 - $D' = \mathbb{R}_*^+$
 - $A = \mathbb{R}_*^+$
- $\lim_{x \rightarrow +\infty} |x| = +\infty$
 $\lim_{x \rightarrow -\infty} |x| = +\infty$

x	$-\infty$	0	$+\infty$
f	$+\infty$	0	$+\infty$



fm'est pas dérivable en 0

Cosinus

$\cos'(x) = -\sin(x)$ **cos est paire et 2π périodique**

- $D = D' = \mathbb{R}$
- $A = [-1, 1]$

x	0	π
\cos	1	-1

