$f(x) = (e^x - 5)(e^x + 1)$

1. $D = \mathbb{R}$

2. $f(-x) = (e^{-x} - 5) \cdot (e^{-x} + 1) \neq f(x) \Rightarrow$ pas paire

   $-f(-x) = -(e^{-x} - 5)(e^{-x} + 1) \neq f(x) \Rightarrow$ pas impaire

3. $f(x) = 0$

   $(e^x - 5) \cdot (e^x + 1) = 0$

   $e^x - 5 = 0 \Rightarrow e^x = 5 \Rightarrow \underbrace{\ln(e^x)}_{x} = \ln(5) \cong \underline{\underline{1{,}61}}$

   $e^x + 1 = 0 \Rightarrow e^x = -1$ impossible

x		$1{,}61$	
$e^x - 5$	$-$	0	$+$
$e^x + 1$	$+$	$+$	$+$
$(e^x - 5)(e^x + 1)$	$-$	0	$+$

4. pas d'A.V. puisque $D = \mathbb{R}$

5. $\boxed{+\infty}$ $m = \lim\limits_{x \to +\infty} \dfrac{(e^x - 5)(e^x + 1)}{x} = +\infty \Rightarrow$ pas d'A.A

   $\boxed{-\infty}$ $m = \lim\limits_{x \to -\infty} \dfrac{(e^x - 5)(e^x + 1)}{x} = \text{"}\dfrac{-5}{-\infty}\text{"} = 0$

   $h = \lim\limits_{x \to -\infty} (\underset{\substack{\uparrow \\ 0}}{e^x} - 5)(\underset{\substack{\uparrow \\ 0}}{e^x} + 1) = -5$

   $\underline{\underline{y = -5}}$

6. $f'(x) = e^x(e^x + 1) + (e^x - 5)e^x = e^x((e^x + 1) + (e^x - 5)) = e^x(2e^x - 4)$

   $= \underline{\underline{2e^x \cdot (e^x - 2)}} = 0$

   $\Rightarrow e^x - 2 = 0 \Rightarrow e^x = 2 \Rightarrow \underbrace{\ln(e^x)}_{x} = \ln(2) = \underline{\underline{0{,}693}}$

x		$0{,}693$	
$2e^x$	$+$	$+$	$+$
e^x-2	$-$	0	$+$
$f'(x)=2e^x(e^x-2)$	$-$	0	$+$
$f(x)$	$\searrow$	-9	$\nearrow$
		min	

7. $f''(x) = 2\cdot e^x(e^x-2) + 2e^x\cdot e^x = 2e^x((e^x-2)+e^x) = 2e^x(2e^x-2)$

$= \underline{\underline{4e^x(e^x-1)}} = 0$

$\Rightarrow e^x-1=0 \Rightarrow e^x = 1 \Rightarrow \underbrace{\ln(e^x)}_{x} = \ln(1) = \underline{\underline{0}}$

x		0	
$4e^x$	$+$	$+$	$+$
e^x-1	$-$	0	$+$
$f''(x)$	$-$	0	$+$
$f(x)$	$\frown$	-8	$\smile$
		p.i.	

pente au point d'inflexion :

$f'(0) = 2\cdot \underbrace{e^0}_{1}\underbrace{(e^0-2)}_{-1} = -2$

8.