$y=\frac{\ln x}{x}$

Dominio $\begin{cases} x\neq 0 \\ x>0 \end{cases}$ $D=(0,\infty)$

P.C $x=0$ ∄

$y=0$ $\ln x=0$ $e^0=x$ $x=1$ $(1,0)$

Asintotas A.V $x=0$ $\lim_{x\to 0^+} f(x)=\frac{-\infty}{0^+}=-\infty$

A.H $\lim_{x\to+\infty}\frac{\ln x}{x}=\frac{\infty}{\infty}=0$ $y=0$

$f(100)>0$

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MON Y EXT

$y'=\frac{\frac{1}{x}x-\ln x\cdot 1}{x^2}=\frac{1-\ln x}{x^2}=0$

$\ln x=1$ $e^1=x$ $x=e$

0 e

$f'(1)$ $f'(7)$

Crec $(0,e)$ Decr (e,∞)

Max $(e,f(e))=(e,\frac{1}{e})$ (tapón)

CURV y PI $y''=\frac{-\frac{1}{x}x^2-(1-\ln x)2x}{x^4}$

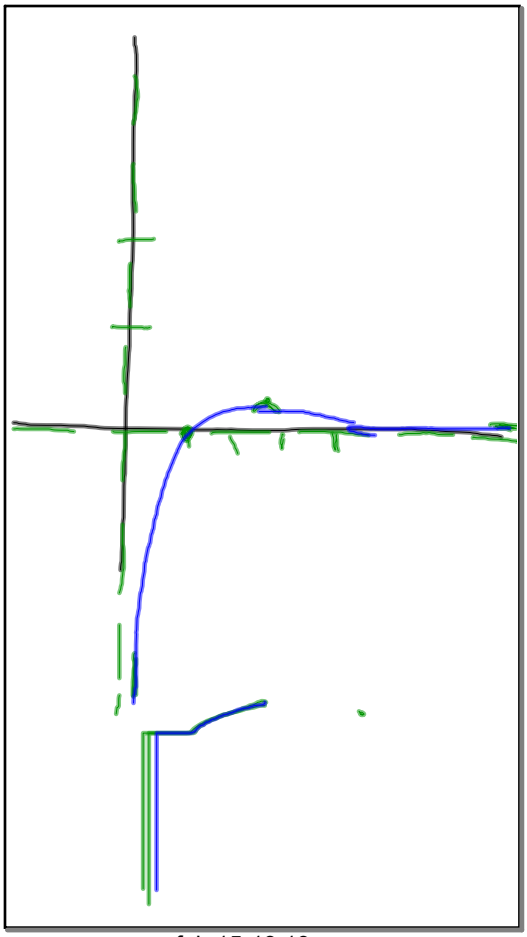
$\frac{-3+2\ln x}{x^3}=0$ $\ln x=\frac{3}{2}$ $e^{\frac{3}{2}}=\sqrt{e^3}$

$f''(1)$ $\sqrt{e^3}$ $f''(10)$

Concava $(0,\sqrt{e^3})$ Conv $(\sqrt{e^3},+\infty)$

PI $\left(\sqrt{e^3},\frac{3}{2\sqrt{e^3}}\right)=(4'48,0'33)$

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$y=xe^x$

$D=\mathbb{R}$

P.C $x=0$ $y=0$ $y=0$ $x=0$ $(0,0)$

Asint A.V ∄

A.H $\lim_{x\to+\infty} xe^x=+\infty$ ∄

$\lim_{x\to-\infty} xe^x=-\infty\cdot 0$

$\lim_{x\to-\infty}\frac{x}{e^{-x}}=\frac{-\infty}{+\infty}\overset{l'H}{=}\lim_{x\to-\infty}\frac{1}{-e^{-x}}=$

$\frac{1}{-\infty}=0$ $y=0$ $f(-100)<0$

A.O $m=\lim_{x\to+\infty} e^x=+\infty$ ∄

Ramas inf $\lim_{x\to+\infty} f(x)=+\infty$

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MON Y EXT

$y' = 1e^x + x e^x = e^x(1+x) = 0$ $e^x \neq 0$

$x = -1$

$-$ | $+$

$f'(-2)$ -1 $f'(+)$

Dec $(-\infty, -1)$, Crec $(-1, \infty)$

Mn $(-1, -1/e) = (-1, -0'373)$

CURV Y PTO

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CURV Y PI

$y'' = e^x(1+x) + e^x \cdot 1 = e^x(2+x)$

$-$ | $+$ $x = -2$

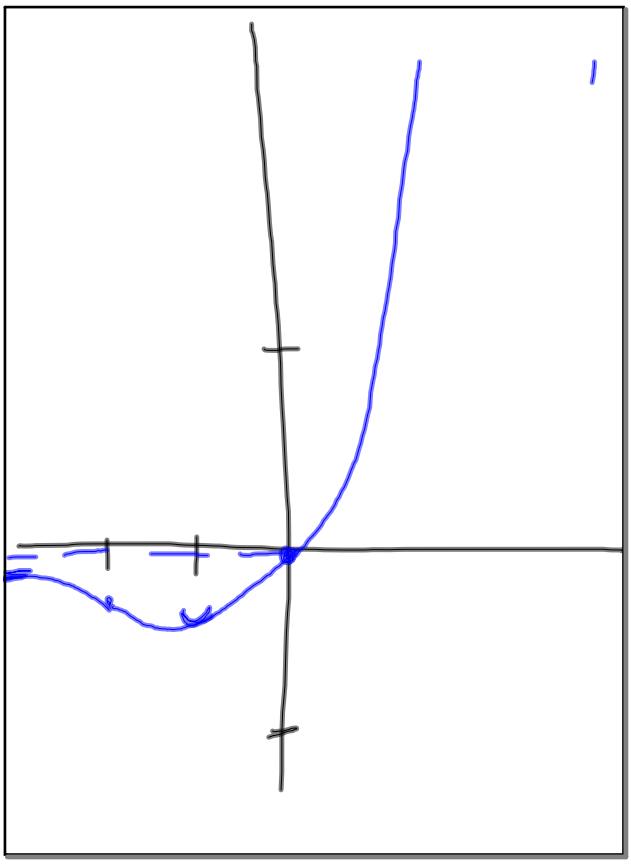
$f''(-3)$ -2 $f''(0)$

Concava $(-\infty, -2)$

Convexa $(-2, \infty)$

PI $(-2, -2/e^2) = (-2, -0'27)$

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$y = \frac{1}{2}\sin 2x + \sin x$

$D = \mathbb{R}$

P $\Rightarrow \sin x$ $P = 2\pi$ $0 < x < 360°$

$\sin 2x$ $0 < 2x < 360°$

$0 < x < 180°$

$P = 360°$ $[0, 360] = [0, 2\pi]$

PC $x = 0$ $y = 0$ $(0,0)$

$y = 0$ $\frac{1}{2}\sin 2x + \sin x = 0$

$\sin 2x + 2\sin x = 0$

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$y = \ln(x^2 - 4|$

$y = \frac{\ln(x+1)}{x-2}$

$y = \frac{e^x}{1-x}$

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