хоризонтални и косе: развијемо $f(x)$ кад $x\to+\infty$, тј. $\frac{1}{x}\to 0$

$$f(x)=\frac{1}{\log(1+\frac{1}{x})}-x=\frac{1}{\frac{1}{x}-\frac{1}{2x^2}+\frac{1}{3x^3}+o(\frac{1}{x^3})}-x$$

$$=\frac{1}{\frac{1}{x}\left(1-\frac{1}{2x}+\frac{1}{3x^2}+o(\frac{1}{x^2})\right)}-x$$

$$=x\cdot\left[\left(1-\frac{1}{2x}+\frac{1}{3x^2}+o(\frac{1}{x^2})\right)^{-1}-1\right]$$

$$=x\cdot\left[1-\left(\frac{-1}{2x}+\frac{1}{3x^2}+o(\frac{1}{x^2})\right)+\left(\frac{-1}{2x}+\frac{1}{3x^2}+o(\frac{1}{x^2})\right)^2+o(\frac{1}{x^2})-1\right]$$

$$=x\left(\frac{1}{2x}-\frac{1}{3x^2}+\frac{1}{4x^2}+o(\frac{1}{x^2})\right)$$

$$=\frac{1}{2}-\frac{1}{12x}+o(\frac{1}{x}),\ x\to+\infty$$

$\Rightarrow y=\frac{1}{2}$ је хоризонтална а. кад $x\to+\infty$

(биће и кад $x\to-\infty$, због симетрије)

5° монотоност и локални екстремуми.

$$f(x)=\frac{1}{\log(1+\frac{1}{x})}-x \quad (\text{јер } x>0,\ \text{па } |x|=x)$$

$$f'(x)=\frac{-\frac{1}{1+\frac{1}{x}}\cdot\frac{-1}{x^2}}{\log^2(1+\frac{1}{x})}-1=\frac{\frac{1}{x^2+x}-\log^2(1+\frac{1}{x})}{\log^2(1+\frac{1}{x})}$$

$$=\frac{1-(x^2+x)\log^2(1+\frac{1}{x})}{(x^2+x)\log^2(1+\frac{1}{x})}=\frac{\left(1-\sqrt{x^2+x}\log(1+\frac{1}{x})\right)\left(1+\sqrt{x^2+x}\log(1+\frac{1}{x})\right)}{(x^2+x)\log^2(1+\frac{1}{x})}$$

$$=\frac{\left(\frac{1}{\sqrt{x^2+x}}-\log(1+\frac{1}{x})\right)\cdot\sqrt{x^2+x}\left(1+\sqrt{x^2+x}\log(1+\frac{1}{x})\right)}{(x^2+x)\log^2(1+\frac{1}{x})}$$

$$\varphi(x)=\frac{1}{\sqrt{x^2+x}}-\log(1+\frac{1}{x})$$

>0

$$\boxed{\operatorname{sgn}f'=\operatorname{sgn}\varphi}$$