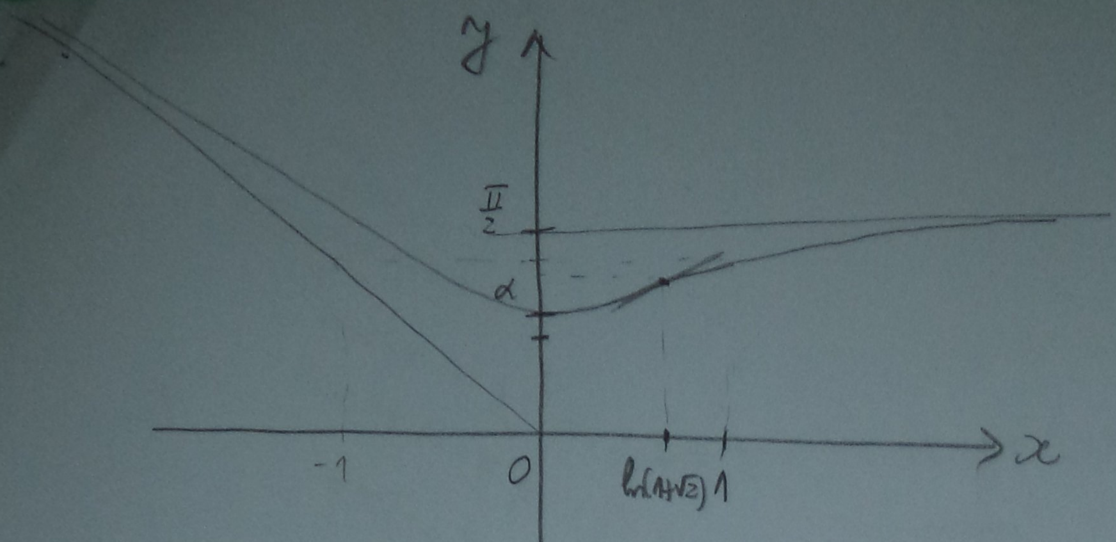


$\alpha = \frac{\pi}{4} + \frac{1}{2}\log 2 < \frac{\pi}{2}$

$\frac{1}{2}\log 2 < \frac{\pi}{4}$

$\log 2 < \frac{\pi}{2}$

$0{,}69 < 1{,}57$

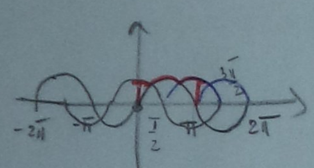
$$f'(\ln(1+\sqrt{2})) = \frac{\sqrt{2}}{1+1+2\sqrt{2}+2} = \frac{\sqrt{2}}{4+2\sqrt{2}} = \frac{1}{2}\cdot\frac{\sqrt{2}}{2+\sqrt{2}}\cdot\frac{2-\sqrt{2}}{2-\sqrt{2}}$$

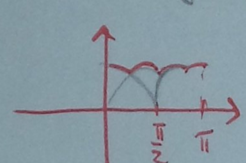
$$= \frac{1}{2}\cdot\frac{2\sqrt{2}-2}{2}$$

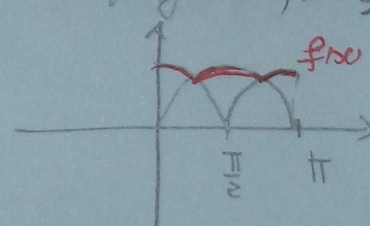
$$= \frac{\sqrt{2}-1}{2} \simeq 0{,}205 \approx \frac{1}{5}$$

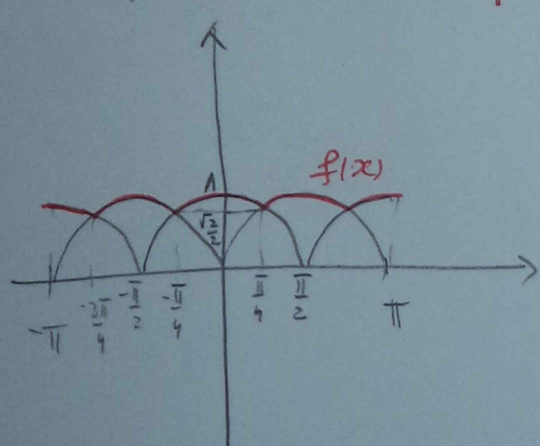
(б) $f(x) = \lim\limits_{n\to\infty} \sqrt[n]{|\cos x|^n + |\sin x|^n} = \max\{|\cos x|, |\sin x|\} = \begin{cases} \cos x, & x \in [0, \frac{\pi}{4}) \\ \sin x, & x \in [\frac{\pi}{4}, \frac{3\pi}{4}) \\ -\cos x, & x \in [\frac{3\pi}{4}, \pi) \end{cases}$

$|\cos x|$ и $|\sin x|$ су периодичне са периодом π, па f посматрамо на $(0,\pi)$









$$f'_+\left(\frac{\pi}{4}\right) = \lim_{x\to\frac{\pi}{4}^+} \cos x = \frac{\sqrt{2}}{2}$$

$$f'_-\left(\frac{\pi}{4}\right) = \lim_{x\to\frac{\pi}{4}^-} (-\sin x) = -\frac{\sqrt{2}}{2}$$

$\Rightarrow f$ није диф у $\frac{\pi}{4}$ и слично за $\frac{3\pi}{4}$.