KALKULUA – MINTEGIETAKO 1. KONTROLA

IZEN-ABIZENAK:

TALDEA:

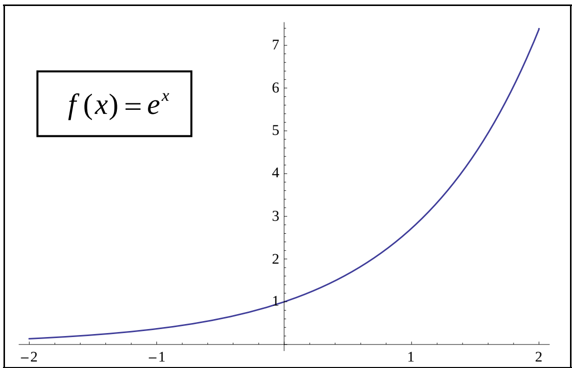
1.- Zerrenda honetako funtzioen adierazpide grafikoak beheko taulan erakusten dira. Idatzi grafiko bakoitzean, grafiko horrek adierazten duen funtzioa:

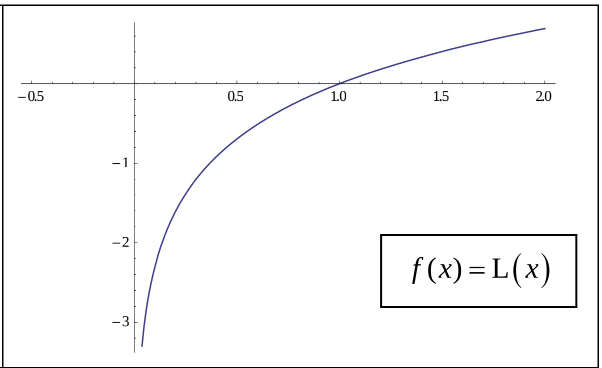
a) $f(x)=e^{x}$ **b)** $f(x)=e^{-x}$ **c)** $f(x)=e^{1/x}$ **d)** $f(x)=-e^{x}$

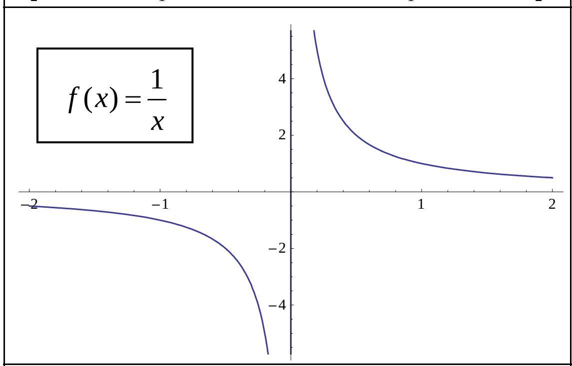
e) $f(x)=\mathrm{L}(x)$ **f)** $f(x)=\mathrm{L}(-x)$ **g)** $f(x)=-\mathrm{L}(x)$ **h)** $f(x)=\dfrac{1}{\mathrm{L}(x)}$

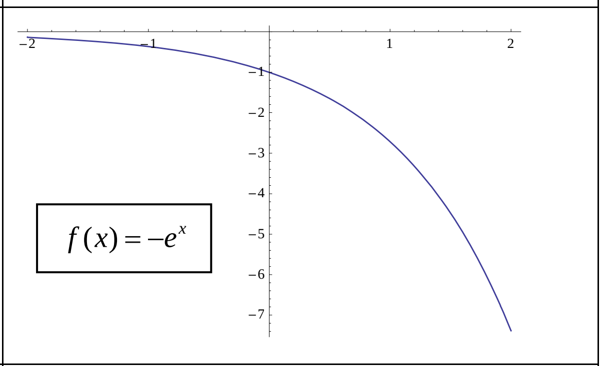
i) $f(x)=\mathrm{L}(x-1)$ **j)** $f(x)=\dfrac{1}{x}$ **k)** $f(x)=\dfrac{1}{x^{2}}$ **l)** $f(x)=-\dfrac{1}{x}$

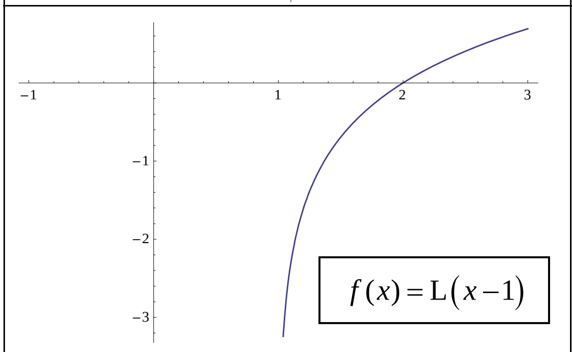
(3 puntu)

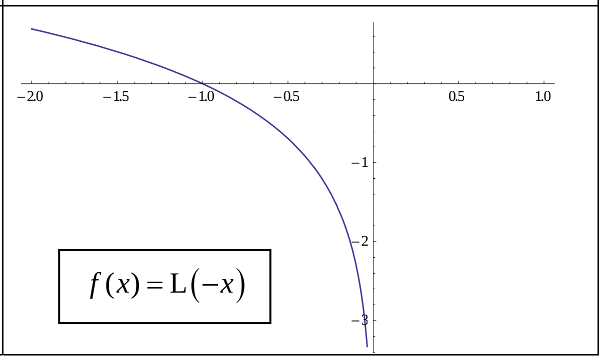


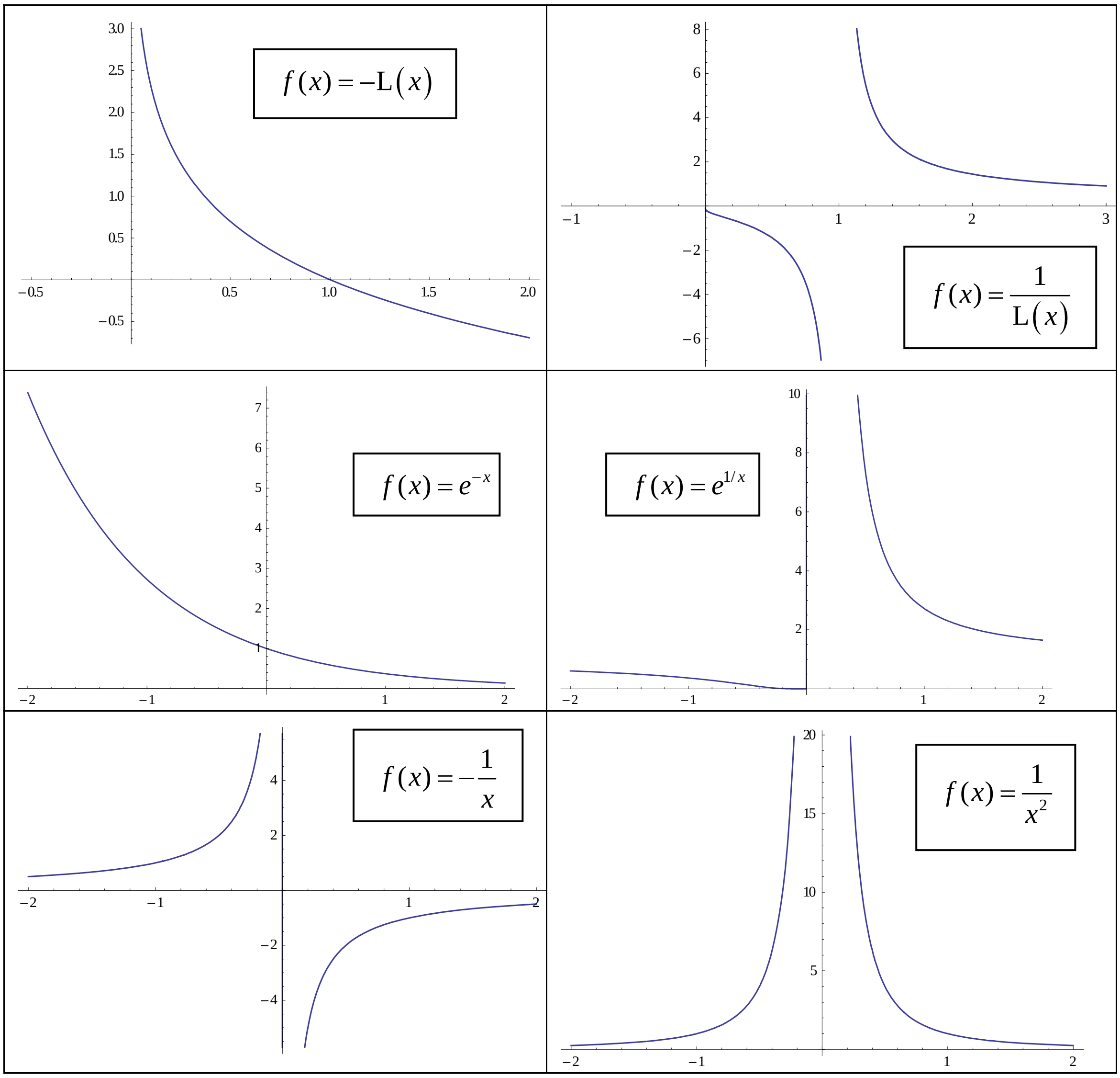












2.- Kalkulatu $\displaystyle \lim_{x\to 2} \frac{\mathrm{L}(x-1)\cdot \arcsin(x-2)\cdot \arctan\left(\frac{1}{(x-2)^2}\right)}{\left(x^2+x-4\right)\cdot \sin^2(2x-4)\cdot \cos\left(\frac{\pi}{x-1}\right)}$ **(1.5 puntu)**

$$\lim_{x\to 2} \frac{\mathrm{L}(x-1)\cdot \arcsin(x-2)\cdot \arctan\left(\frac{1}{(x-2)^2}\right)}{\left(x^2+x-4\right)\cdot \sin^2(2x-4)\cdot \cos\left(\frac{\pi}{x-1}\right)} = \lim_{x\to 2} \frac{(x-2)\cdot (x-2)\cdot \frac{\pi}{2}}{2\cdot (2x-4)^2\cdot (-1)} =$$

$$= -\frac{\pi}{4}\lim_{x\to 2} \frac{(x-2)^2}{2^2\cdot (x-2)^2} = -\frac{\pi}{16}$$

3.- Aurkitu $f(x)=\dfrac{1}{\mathrm{L}\left(|x-1|\right)}+\dfrac{e^{1/x-3}}{\dfrac{\pi}{4}-\arctan(x-2)}$ **funtzioaren definizio-eremua**

(1.5 puntu)

$$D=\left\{x\in\mathbb{R}\,/\,\mathrm{L}\left(|x-1|\right)\neq 0,\ |x-1|>0,\ x-3\neq 0,\ \frac{\pi}{4}-\arctan(x-2)\neq 0\right\}$$

- $\mathrm{L}\left(|x-1|\right)\neq 0 \iff |x-1|\neq 1 \iff x-1\neq\pm 1 \iff \begin{cases} x\neq 0 \\ x\neq 2\end{cases}$
- $|x-1|>0 \iff |x-1|\neq 0 \iff x-1\neq 0 \iff x\neq 1$
- $x-3\neq 0 \iff x\neq 3$
- $\dfrac{\pi}{4}-\arctan(x-2)\neq 0 \iff \arctan(x-2)\neq\dfrac{\pi}{4} \iff x-2\neq\tan\left(\dfrac{\pi}{4}\right)=1 \iff x\neq 3$

Beraz, $D=\mathbb{R}-\{0,1,2,3\}$