KALKULUA – MINTEGIETAKO 1. KONTROLA (2020-10-15)

IZEN-ABIZENAK:

1.- Aurki ezazu $f(x)=\dfrac{\sqrt{3-x}}{\mathrm{L}(x+2)}$ **funtzioaren definizio-eremua (idatz itzazu bete behar diren baldintza guztiak)** **(Puntu 1)**

$$D=\left\{x\in\mathbb{R}\,/\,3-x\geq 0,\mathrm{L}(x+2)\neq 0,x+2>0\right\}$$

$3-x\geq 0 \quad\Leftrightarrow\quad x\leq 3$

$\mathrm{L}(x+2)\neq 0 \quad\Leftrightarrow\quad x+2\neq 1 \quad\Leftrightarrow\quad x\neq -1$

$x+2>0 \quad\Leftrightarrow\quad x>-2$

$$D=\left(-2,-1\right)\cup\left(-1,3\right]=\left(-2,3\right]-\left\{-1\right\}$$

2.- Hurrengo bi limiteetan, idatz ezazu, arrazoituz, *a* parametroaren balioa (zenbaki erreala zein ∞ izan daiteke) emaitzak zuzenak izan daitezen. (0.5 puntu)

a) $\lim\limits_{x\to a}\dfrac{\arcsin(x-2)}{x-2}=1 \quad\Leftrightarrow\quad \arcsin(x-2)\overset{x-2\to 0}{\sim} x-2 \quad\Leftrightarrow\quad a=2$

b) $\lim\limits_{x\to a}\dfrac{\mathrm{L}(x+4)}{x+3}=1 \quad\Leftrightarrow\quad \mathrm{L}(x+4)\overset{x+4\to 1}{\sim} x+4-1=x+3 \quad\Leftrightarrow\quad a=-3$

3.- Kalkula ezazu $\lim\limits_{x\to 0}\dfrac{x-\sin x}{x^2\cdot\tan x}$ **(Puntu 1)**

$$\lim_{x\to 0}\frac{x-\sin x}{x^2\cdot\tan x}\overset{(1)}{=}\lim_{x\to 0}\frac{x-\sin x}{x^3}\overset{(\mathrm{L'H})}{=}\lim_{x\to 0}\frac{1-\cos x}{3x^2}\overset{(2)}{=}\lim_{x\to 0}\frac{\frac{x^2}{2}}{3x^2}=\frac{1}{6}$$

(1) $\tan x\overset{x\to 0}{\sim} x$

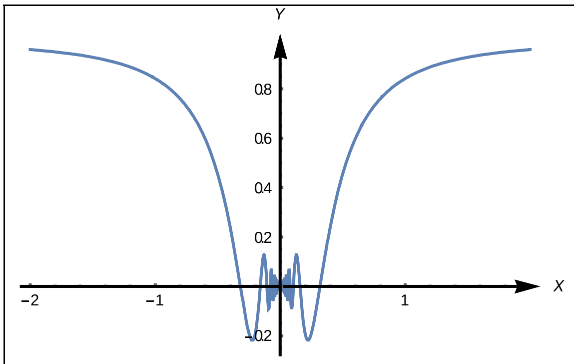
(2) $1-\cos x\overset{x\to 0}{\sim}\dfrac{x^2}{2}$

4.- Zerrenda honetako funtzioen adierazpide grafikoak beheko taulan erakusten dira. Idatz ezazu grafiko bakoitzean, grafiko horrek adierazten duen funtzioa:

a) $f(x) = e^{1/x}$ **b)** $f(x) = \dfrac{1}{\mathrm{L}(|x|)}$ **c)** $f(x) = \left(\dfrac{2}{5}\right)^{1/x}$

d) $f(x) = \sin\left(\dfrac{1}{x}\right)$ **e)** $f(x) = x \cdot \sin\left(\dfrac{1}{x}\right)$ **f)** $f(x) = \dfrac{\sin x}{x}$

(1.5 puntu)



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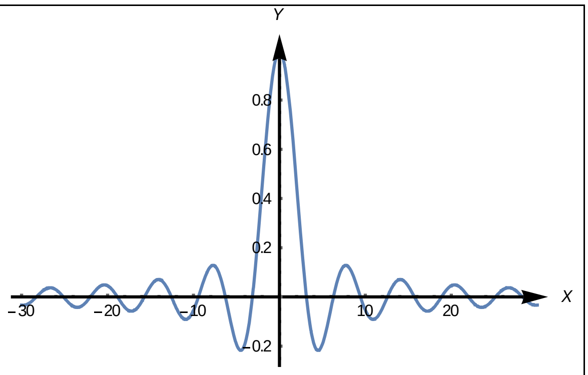

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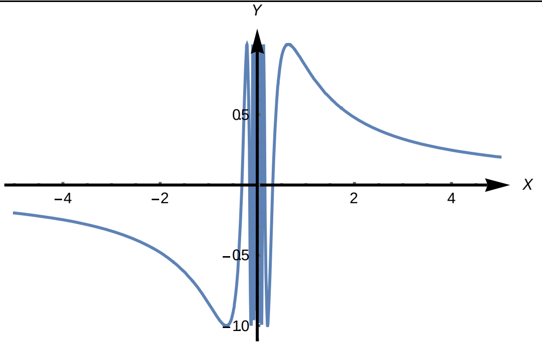

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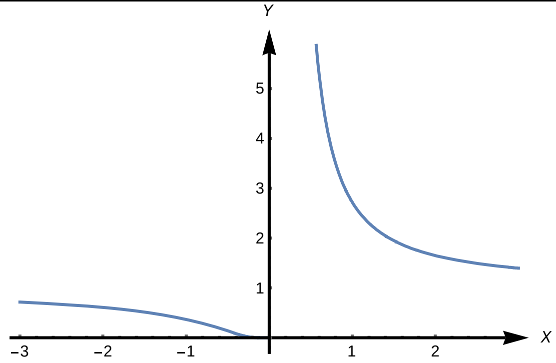
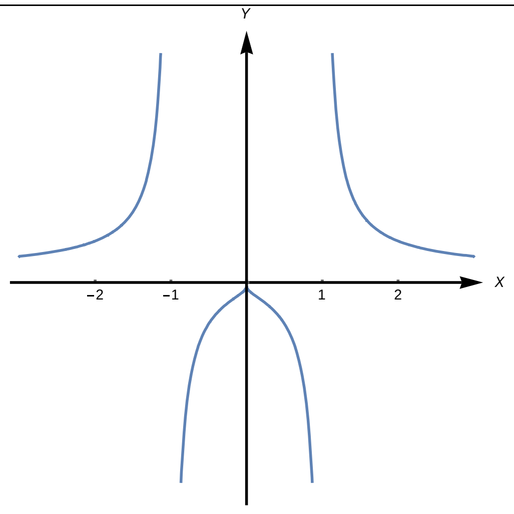


(a)



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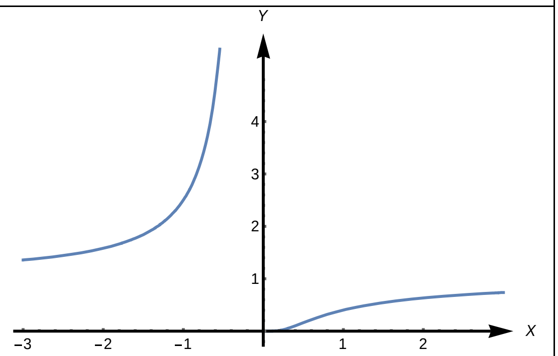


(c)

KALKULUA – MINTEGIETAKO 1. KONTROLA (2020-10-26)

IZEN-ABIZENAK:

1.- Aurki ezazu $f(x)=\dfrac{\mathrm{L}(x+4)}{\sqrt{x^2-1}}$ **funtzioaren definizio-eremua (idatz itzazu bete behar diren baldintza guztiak) (Puntu 1)**

$$D=\left\{x\in\mathbb{R}\,/\,x+4>0,x^2-1\geq 0,\sqrt{x^2-1}\neq 0\right\}=\left\{x\in\mathbb{R}\,/\,x+4>0,x^2-1>0\right\}$$

$x+4>0 \quad \Leftrightarrow \quad x>-4$

$x^2-1>0 \quad \Leftrightarrow \quad x^2>1 \quad \Leftrightarrow \quad |x|>1 \quad \Leftrightarrow \quad \begin{cases} x>1 \\ x<-1 \end{cases}$

$$D=(-4,-1)\cup(1,\infty)$$

2.- Hurrengo bi limiteetan, idatz ezazu, arrazoituz, *a* parametroaren balioa (zenbaki erreala zein ∞ izan daiteke) emaitzak zuzenak izan daitezen. (0.5 puntu)

a) $\lim\limits_{x\to a}\dfrac{\tan(x+1)}{x+1}=1 \quad \Leftrightarrow \quad \tan(x+1)\overset{x+1\to 0}{\sim} x+1 \quad \Leftrightarrow \quad a=-1$

b) $\lim\limits_{x\to 2}\dfrac{\mathrm{L}(x-1)}{x-a}=1 \quad \Leftrightarrow \quad \mathrm{L}(x-1)\overset{x\to 2}{\sim} x-1-1=x-2=x-a \quad \Leftrightarrow \quad a=2$

3.- Kalkula ezazu $\lim\limits_{x\to 0}\dfrac{x-\sin x-\cos x+1}{x\cdot\tan x}$ **(Puntu 1)**

$$\lim_{x\to 0}\frac{x-\sin x-\cos x+1}{x\cdot\tan x}\overset{(1)}{=}\lim_{x\to 0}\frac{x-\sin x-\cos x+1}{x^2}\overset{(\mathrm{L'H})}{=}\lim_{x\to 0}\frac{1-\cos x+\sin x}{2x}\overset{(\mathrm{L'H})}{=}\lim_{x\to 0}\frac{\sin x+\cos x}{2}=\frac{1}{2}$$

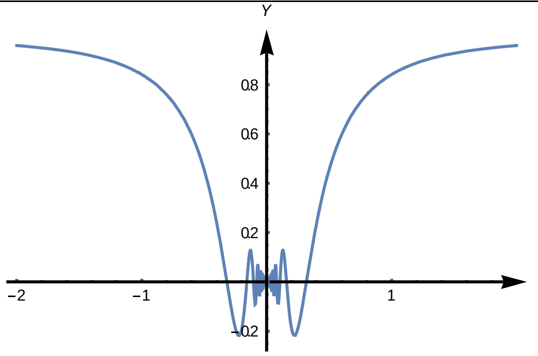
(1) $\tan x\overset{x\to 0}{\sim} x$

4.- Zerrenda honetako funtzioen adierazpide grafikoak beheko taulan erakusten dira. Idatz ezazu grafiko bakoitzean, grafiko horrek adierazten duen funtzioa:

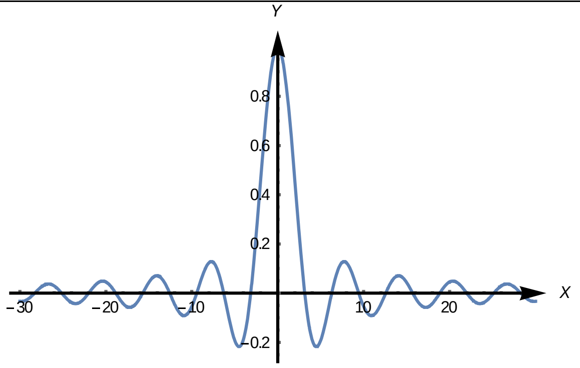
a) $f(x)=e^{1/x^2}$ b) $f(x)=\dfrac{1}{\mathrm{L}(|x|)}$ c) $f(x)=x\cdot\sin\left(\dfrac{1}{x^2}\right)$

d) $f(x)=\sin\left(\dfrac{1}{x}\right)$ e) $f(x)=x\cdot\sin\left(\dfrac{1}{x}\right)$ f) $f(x)=\dfrac{\sin x}{x}$

(1.5 puntu)



(e)



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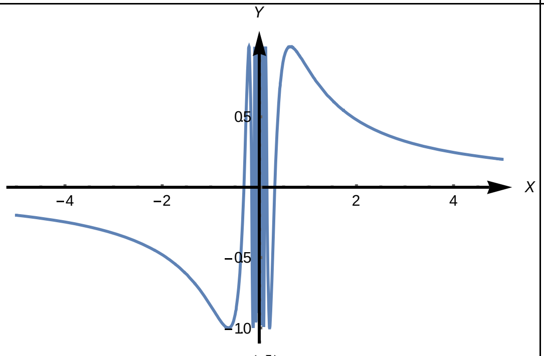

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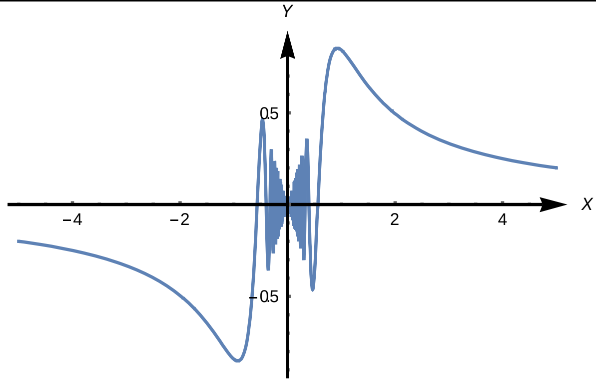
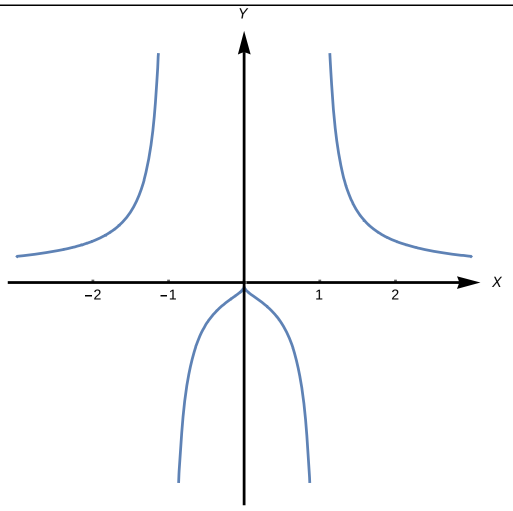
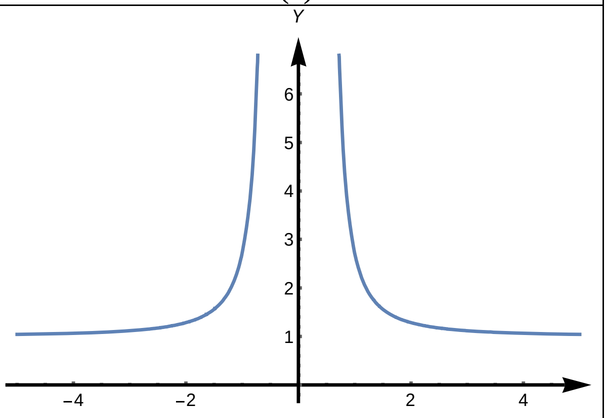


(c)



(b)



(a)