Zadaća - vježbe 2

Limesi i neprekidnost

Zadatak. Izračunajte limese

a) $\lim\limits_{x\to\infty}\left(\dfrac{3x-1}{2x+2}\right)^{\sqrt{x^2+1}}$

b) $\lim\limits_{x\to 0}\ \dfrac{1}{x}\ln\left(\dfrac{1+x}{1-x}\right)$

c) $\lim\limits_{x\to 0}\ (\cos x)^{\frac{1}{x\sin x}}$

d) $\lim\limits_{x\to 0}\ \dfrac{\ln(\cos x)}{x^2}$

Zadatak. Odredite realne parametre $a, b \in \mathbb{R}$ tako da funkcija

$$f(x)=\begin{cases}-2\sin x, & \leq \frac{-\pi}{2}\\ a\sin x+b, & \frac{-\pi}{2}<x<\frac{\pi}{2}\\ \cos x, & x\geq\frac{-\pi}{2}\end{cases}$$

bude neprekidna

Zadatak. Izračunajte limese

a) $\lim\limits_{x\to 1}\ \dfrac{\sqrt[3]{x}-1}{\sqrt[5]{x}-1}$

b) $\lim\limits_{x\to 1}\ \dfrac{1-\cos^3 x}{x^2}$

c) $\lim\limits_{x\to 0}\ (\cos x)^{\frac{1}{x+\sin x}}$

d) $\lim\limits_{x\to 0}\ \dfrac{\operatorname{sh} x}{x}$

e) $\lim\limits_{x\to 0}\ \dfrac{1-\operatorname{ch} x}{x^2}$

f) $\lim\limits_{x\to 0}\ (1+\sin x)^{\operatorname{tg} x}$

g) $\lim\limits_{x\to 0}\ \dfrac{2^x-\cos x}{3^x-\operatorname{ch} x}$

h) $\lim\limits_{x\to 0}\ \dfrac{e^{\operatorname{arc\,tg} x}-e^{\arcsin x}}{1-\operatorname{ch}^3 x}$

i) $\lim\limits_{x\to 0}\ \dfrac{\sqrt{\cos(2x)}\cdot e^{2x^2-1}}{\ln(1+2x)\cdot\ln(1+2\arcsin x)}$