Сармин Павел

№1

a) верно

b) $\left(x+\bar{\bar{o}}(x)\right)\left(2x^2+\bar{\bar{o}}(x^2)\right)=2x^3+\bar{\bar{o}}(x^3)+\bar{\bar{o}}(2x^3)+\bar{\bar{o}}(x^3)=2x^3+\bar{\bar{o}}(x^3)$ - верно

c) $\underset{\bar{\bar{o}}(1)}{\bar{\bar{o}}(1)}+\underset{\bar{\bar{o}}(1)}{\underset{\shortparallel}{\bar{\bar{o}}(2)}}+\underset{\bar{\bar{o}}(1)}{\underset{\shortparallel}{\bar{\bar{o}}(3)}}+\underset{\bar{\bar{o}}(1)}{\underset{\shortparallel}{\bar{\bar{o}}(4)}}$ => верно

d) $\bar{\bar{o}}(1)-\bar{\bar{o}}(1)=\bar{\bar{o}}(1)+\bar{\bar{o}}(-1)=\bar{\bar{o}}(1)+\bar{\bar{o}}(1)=\bar{\bar{o}}(1)$ => неверно

№2

a) $\lim\limits_{x\to 0}\left\{\frac{tg\,x-x}{\sin x-x}=\frac{\cancel{x}+\frac{1}{3}x^3-\cancel{x}+\bar{\bar{o}}(x^3)}{\cancel{x}-\frac{1}{6}x^3-\cancel{x}+\bar{\bar{o}}(x^3)}=\frac{\frac{1}{3}+\bar{\bar{o}}(x^3)}{-\frac{1}{6}+\bar{\bar{o}}(x^3)}\right\}=-2$

b) $\lim\limits_{x\to 0}\left\{\frac{1+x\cos x-\sqrt{1+2x}}{\ln(1+x)-x}=\frac{\cancel{1}+x-\cancel{\frac{x^3}{2}}+\bar{\bar{o}}(x^3)-1+x-\frac{x^2}{2}+\cancel{\frac{x^3}{2}}+\bar{\bar{o}}(x^3)}{\cancel{x}-\frac{x^2}{2}+\frac{x^3}{3}+\bar{\bar{o}}(x^3)-\cancel{x}}\right.=$

$=\frac{2x-\frac{x^2}{2}+\bar{\bar{o}}(x^2)}{-\frac{x^2}{2}+\bar{\bar{o}}(x^2)}=\left.\frac{x\left(2-\frac{x}{2}+\bar{\bar{o}}(x)\right)}{x\left(-\frac{x}{2}+\bar{\bar{o}}(x)\right)}\right\}=\cdot\infty$ $\quad -\frac{x^2}{2}+\bar{\bar{o}}(x^2)$ $\quad +1$

c) $\lim\limits_{x\to 0}\left\{\frac{\sqrt[5]{1+2x}-1}{\sqrt[4]{1+x}\ \sqrt{1-x}}=\frac{\cancel{1}+\frac{2x}{5}-\frac{8x^2}{25}-\cancel{1}+\bar{\bar{o}}(x^2)}{1+\frac{x}{4}-\frac{3x^2}{32}-1+\frac{x}{2}+\frac{x^2}{8}+\bar{\bar{o}}(x^2)}=\frac{\frac{2x}{5}+\bar{\bar{o}}(x)}{\frac{3x}{4}+\bar{\bar{o}}(x)}=\right.$

$=\left.\frac{\frac{2}{5}+\bar{\bar{o}}(1)}{\frac{3}{4}+\bar{\bar{o}}(1)}\right\}=\frac{8}{15}$

это степень

d) $\lim\limits_{x\to 0}\left\{\frac{(1-x)^x-1}{x^2}=\frac{e^{\ln(1+x)x}-1}{x^2}=\frac{e^{\overbrace{1+\ln(1+x)x+\frac{1}{2}(\ln(1+x)x)^2+o(x^2)}}-\cancel{1}}{x^2}=\right.$

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