Limiti di funzioni calcolabili con sviluppo di Taylor

Calcolare i seguenti limiti:

1. $\lim\limits_{x\to 0} \dfrac{(\sinh x)^2-(\sin x)^2}{(e^{x^4}-1)\,\sqrt[3]{2-x}}$; $\left[\dfrac{2}{3\sqrt[3]{2}}\right]$

2. $\lim\limits_{x\to 0^+} \dfrac{\cos\left(x-\frac{\pi}{3}\right)(x^x-1-x\ln x)}{x^{2x}-1-2x\ln x}$; $\left[\dfrac{1}{8}\right]$

3. $\lim\limits_{x\to 0^+} \dfrac{\sin(1-x^x)}{\tan x\,\ln x\,\arctan\left(\sin\left(\frac{\pi}{2}-x\right)\right)}$; $\left[-\dfrac{4}{\pi}\right]$

4. $\lim\limits_{x\to 0^+} \dfrac{(\sin x)^2-\tan(x^2)}{x^4\left(\cosh\left(\frac{x}{\sqrt{3}}\right)+2\right)}$; $\left[-\dfrac{1}{9}\right]$

5. $\lim\limits_{x\to 0^+} \dfrac{(x^{2x}-1-2x\ln x)\,3^{\sqrt[3]{1-x^2}}}{\sinh(x^2)\ln^2 x}$; $[6]$

6. $\lim\limits_{x\to 0} \dfrac{(e^{-x}+\sin x-\cos x)(e^{-x}+\sin x+\cos x)}{\cos^2 x-\cos(x^2)}$; $[-2]$

7. $\lim\limits_{x\to 0} \dfrac{\ln(\cos x)-\ln(e^x-x)}{x\arcsin x\sqrt{2x+\cos(2x)}}$; $[-1]$

8. $\lim\limits_{x\to 0} \dfrac{(1+\cos\sqrt{x})(5\cos\sqrt{x}-5x^x)}{(e^{\sqrt{x}}-\sin\sqrt{x})^2-1}$; $[+\infty]$

9. $\lim\limits_{x\to 0} \dfrac{(6\cosh\sqrt{x}-6\cos\sqrt{x})\left(e^{x^3}-1\right)}{15\sin^2 x-15(\arcsin x)^2}$; $\left[-\dfrac{3}{5}\right]$

10. $\lim\limits_{x\to 0} \dfrac{e^{\arctan(x-1)}\left(e^{x^2}-\cosh(x\sqrt{2})\right)}{(x-\sin x)\tan x}$; $\left[2\,e^{-\frac{\pi}{4}}\right]$

11. $\lim\limits_{x\to+\infty} \dfrac{\frac{\pi}{2}-\arctan x}{x-x^2\ln\left(1+\frac{1}{x}\right)-\frac{1}{2}}$; $[-3]$

12. $\lim\limits_{x\to+\infty} \dfrac{e^{\frac{1}{x}}-\sqrt{1+\ln\left(1+\frac{1}{x}\right)}}{\sqrt{\cosh\frac{1}{x}}-\sqrt{\cos\frac{1}{x}}}$; $[+\infty]$

13. $\lim\limits_{x\to 0}\left(\frac{1}{2}\,x^2+\sqrt{1+2\tan x}-\sin x\right)^{\frac{1}{\sinh x-\arctan x}}$; $[e^2]$

14. $\lim\limits_{x\to 0}(1-\sin x+\arctan x)^{\frac{1}{\sinh x-\sin x}}$. $\left[e^{-\frac{1}{2}}\right]$