Analisi Matematica 1 - Esercitazione 6

Esercizio 1. Calcolare (se esistono) i seguenti limiti di funzioni:

1. $\lim_{x\to 0} \dfrac{\sin^2(2x)}{1-\cos x}$
2. $\lim_{x\to 0} \dfrac{\sin(e^{x^2}-1)}{x+x^2}$
3. $\lim_{x\to 1} x^{\frac{1}{1-x^2}}$
4. $\lim_{x\to 0} \dfrac{\log(\cos\frac{x}{2})}{x^3}$
5. $\lim_{x\to 0} \dfrac{\sqrt{\sin^2 x + x^4}}{1-\cos x}$
6. $\lim_{x\to 3} \dfrac{\frac{27}{x^3}-1}{x-3}$
7. $\lim_{x\to -1} \dfrac{1-2x^2-x}{(1+x)^2}$
8. $\lim_{x\to 2} \dfrac{\sqrt{5x-6}-2}{2x^3-5x^2-x+6}$
9. $\lim_{x\to \pi} \dfrac{\sin\left(\frac{x^2}{\pi}\right)}{x^2-\pi x}$
10. $\lim_{x\to +\infty} x\cos\left(\dfrac{1+\pi x}{2x-1}\right)$
11. $\lim_{x\to 1} \dfrac{x-1}{x+2} e^{\frac{1}{1-x^2}}$
12. $\lim_{x\to 0} \dfrac{\tan(2x)(1-\cos(5x)),}{(\sin x - x^3)^3}$.
13. $\lim_{x\to -\infty} \dfrac{e^{-x}\sin(e^x \sin(x^3))}{\ln(1-x)}$
14. $\lim_{x\to +\infty} \left(\dfrac{x^4}{\sqrt{2+3x^3}}\right)^{\frac{1}{\log x}}$
15. $\lim_{x\to \frac{\pi}{3}} \dfrac{(1-2\cos x)^2}{(x-\frac{\pi}{3})\tan x \sin(3x)}$