

Esercitazione analisi 1

17-18/11/2025

Esercizio 1 Calcolare i seguenti limiti

a)

$$\lim_{x \rightarrow 0} \frac{x \sin^2 x - x^3}{5x \ln(1 + x^4)}$$

b)

$$\lim_{x \rightarrow 0} \frac{\ln(1 + 2x) - \sin 2x}{x^2}$$

c)

$$\lim_{x \rightarrow 0} \frac{\arctan x - x \cos x}{x - \arcsin x}$$

d)

$$\lim_{x \rightarrow 0} \frac{\sin x - x + \frac{x^3}{6}}{x^5}$$

e)

$$\lim_{x \rightarrow 0} \frac{x - \sin x}{e^x - 1 - x - \frac{x^2}{2}}$$

f)

$$\lim_{x \rightarrow 0} \frac{\ln^2(1 + x) - \sin^2 x}{1 - e^{-x^2}}$$

g)

$$\lim_{x \rightarrow 0} \frac{2(\tan x - \sin x) - x^3}{x^5}$$

h)

$$\lim_{x \rightarrow 0} \frac{e^{x^2+3x} - e^{2x}}{\sin(\frac{\pi}{2}x)}$$

i)

$$\lim_{x \rightarrow 0} \frac{x \arctan x + 2 \ln(\cos x)}{\sin^2 x - \sin x^2}$$

l)

$$\lim_{x \rightarrow 0} \frac{\sin(e^x - 1) - x - \frac{x^2}{2}}{x^4}$$

m)

$$\lim_{x \rightarrow 1} \frac{(x - 1) \ln x - \frac{(x-1)^2}{x}}{(e^x - e)^3}$$

n)

$$\lim_{x \rightarrow 0} \frac{6x - 2 \sin 3x}{\arctan(2x) \arcsin(2x) \tan(2x)}$$

o)

$$\lim_{x \rightarrow 0} \frac{\ln(\cos x) + \ln(e^x - x) - \frac{1}{6}x^3}{x^3 \sin x}$$