# Tutorato 07.11.2019

**Esercizio 1:** Risolvere, sfruttando i limiti notevoli e/o il teorema di De L'Hospital e/o gli sviluppi in serie di Taylor:

$$\lim_{x\to 0} \frac{\pi x^3 + x^5}{x^5 + x^6} \sin x^2$$

$$\lim_{x\to 0} \frac{1-\cos x}{x^2}$$

$$\lim_{x\to +\infty} x^4(\log(4+x^4) - 4\log x)$$

$$\lim_{x\to 0} \frac{(1+3x)^{2x} - 1}{\sin x^2}$$

$$\lim_{x\to 0} \frac{\sin 4x + \sin x}{\log(1+x)}$$

$$\lim_{x\to 0} \frac{\log(1+2x)}{\sin(3^x - 1)}$$

$$\lim_{x\to 2} \frac{\log 2 - logx}{\sqrt{2} - \sqrt{x}}$$

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

$$\lim_{x\to +\infty} \frac{2e^x + 5}{6 - 4e^x}$$

$$\lim_{x\to 0^+} \frac{\log(\log(1+x))}{\log x}$$

$$\lim_{x\to 2} \frac{\sqrt{4x - x^2} - 2}{1 - \cos(\pi x)}$$

$$\lim_{x\to 1} \frac{x^x - 1}{\cos\left(\frac{\pi}{3}x\right) - \frac{1}{2}}$$

$$\lim_{x\to 0} \frac{\log(\cos^2 x)}{2x}$$

$$\lim_{x\to +\infty} \frac{e^{3x}}{x^3}$$

$$\lim_{x\to 0} \frac{arctg(x) - \sin(x)}{\sin(x) - x}$$

$$\lim_{x\to 0} \frac{\log(1+x) - \sin(x)}{e^{2x} - \cos(x)}$$

$$\lim_{x\to 0} \frac{3\tan(4x) - 12\tan(x)}{\sin(4x) - 4\sin(x)}$$

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

$$\lim_{x \to 0} \frac{\tan(x) - x}{x^5} - \frac{1}{3x^2}$$

$$\lim_{x \to 0} \frac{\log\left(1 + \frac{x}{2}\right)}{\sin(3x)}$$