

Esercizi proposti

1. Calcolare i seguenti limiti:

$$\lim_{x \rightarrow 0} \frac{\operatorname{sen} 5x}{\operatorname{sen} 3x}; \quad \lim_{x \rightarrow +\infty} \frac{\operatorname{sen} 3x}{x}; \quad \lim_{x \rightarrow 0} \frac{\operatorname{sen} x^3}{x}$$

$$\lim_{x \rightarrow 0} x \operatorname{sen} x; \quad \lim_{x \rightarrow +\infty} x \operatorname{sen} x; \quad \lim_{x \rightarrow 0^+} \frac{1 - \cos x}{x^d \cdot \operatorname{sen} x} \text{ con } d \in \mathbb{R};$$

$$\lim_{x \rightarrow 0} \frac{x^2 - \operatorname{sen}^2 x}{x^2 + \operatorname{sen}^2 x}; \quad \lim_{x \rightarrow 0^+} \frac{x^d}{\operatorname{sen} x}; \quad \lim_{x \rightarrow 0} \frac{\operatorname{tg} 2x}{\operatorname{sen} 3x};$$

$$\lim_{x \rightarrow 2} (x-2) \cdot \operatorname{sen} \frac{1}{x-2}; \quad \lim_{x \rightarrow 1} \frac{\sqrt{x}-1}{x-1}; \quad \lim_{x \rightarrow 0^+} \frac{x^2 + \operatorname{sen}^2 x}{x^2 + \operatorname{sen}(x^2)}$$

$$\lim_{x \rightarrow 0} \frac{\sqrt{1+\cos x} - 2}{\operatorname{sen}(x^2)}; \quad \lim_{x \rightarrow 2} \frac{x^2 - 3x + 2}{x-2}; \quad \lim_{x \rightarrow \frac{\pi}{2}} \frac{\operatorname{sen}^2 x - 3 \operatorname{sen} x + 2}{\operatorname{sen} x - 1}$$

$$\lim_{x \rightarrow \pi} \frac{\operatorname{sen}^2(\pi-x)}{\operatorname{cos} x + 1}; \quad \lim_{x \rightarrow \frac{\pi}{2}} \frac{2 - 2 \operatorname{sen} x}{(\pi - 2x)^2}; \quad \lim_{x \rightarrow k\pi} [\operatorname{sen} x];$$

$$\lim_{x \rightarrow 0^+} \frac{\operatorname{tg} x - \operatorname{sen} x}{x^d} \text{ con } d \in \mathbb{R}; \quad \lim_{x \rightarrow 0} \frac{\lg(1+x^2)}{3x^2};$$

$$\lim_{x \rightarrow 0^+} \frac{e^{\operatorname{sen} x} - 1}{\sqrt{x} \cdot \operatorname{arctg} 2\sqrt{x}}; \quad \lim_{x \rightarrow -\infty} \sqrt{x^3 + 1}; \quad \lim_{x \rightarrow +\infty} \sqrt{\frac{2x+1}{x+1}};$$

$$\lim_{x \rightarrow 1} (x-1) \cdot \operatorname{sen}^2\left(\frac{1}{x-1}\right); \quad \lim_{x \rightarrow 0} (1+x)^{\frac{1}{5x}}; \quad \lim_{x \rightarrow 0} e^{-\frac{1}{x}};$$

$$\lim_{x \rightarrow 1} \frac{\operatorname{sen}(x-1)}{x-1}; \quad \lim_{x \rightarrow 0} \frac{3x - \operatorname{sen} x}{4x - 5 \operatorname{sen} x}; \quad \lim_{x \rightarrow 0} \frac{\operatorname{sen} x}{|x|}$$

$$\lim_{x \rightarrow 0} \frac{1 - \cos x}{x \operatorname{sen} x}; \quad \lim_{x \rightarrow +\infty} \sqrt{x+3} - \sqrt{x+1}; \quad \lim_{x \rightarrow -\infty} \left(1 - \frac{1}{x}\right)^{4x};$$

$$\lim_{x \rightarrow 0} \frac{(\operatorname{tg} x + 1)^x - 1}{x^2}; \quad \lim_{x \rightarrow +\infty} \frac{x}{x+1} \operatorname{sen} x; \quad \lim_{x \rightarrow 0} \frac{2^x - 3}{1 - 3^x}$$

$$\lim_{x \rightarrow +\infty} \frac{e^{\sqrt{x}}}{1+x^4}; \quad \lim_{x \rightarrow +\infty} \frac{x^4 \operatorname{sen}^2 x}{1+x^2}; \quad \lim_{m \rightarrow +\infty} (\operatorname{cos} m\pi) \cdot \sqrt[n]{n};$$

$$\lim_{n \rightarrow +\infty} \left(\frac{2^n}{1+n^2} + \operatorname{sen} n\right); \quad \lim_{n \rightarrow +\infty} \frac{(n^4+1) \operatorname{cos} n}{2^n}; \quad \lim_{n \rightarrow +\infty} 2^n \operatorname{sen} \frac{1}{2^n}.$$