

LIMIT NOTE VOLI

$$1) \lim_{x \rightarrow 0} \frac{\sin x}{x} = 1 ; \lim_{x \rightarrow 0} \frac{1 - \cos x}{x^2} = \frac{1}{2}$$

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

$$3) \lim_{x \rightarrow 0} \frac{\log(1+x)}{x} = 1$$

$$4) \lim_{x \rightarrow 0} x^k \log x = 0 \quad \forall k > 0$$

$$5) \lim_{x \rightarrow +\infty} \left(1 + \frac{\alpha}{x}\right)^x = e^\alpha \quad \alpha \in \mathbb{R}$$

in particolare $\lim_{x \rightarrow +\infty} \left(1 + \frac{1}{x}\right)^x = e$

$$6) \lim_{x \rightarrow +\infty} x^{-k} e^x = +\infty \quad \forall k > 0$$

e quindi

$$\lim_{x \rightarrow +\infty} x^k e^{-x} = 0 \quad \forall k > 0$$

$$7) \lim_{x \rightarrow +\infty} x^{-k} \log x = 0 \quad \forall k > 0$$