FUNZIONI CONTINUE

$f: A \subseteq \mathbb{R} \to \mathbb{R}$; $\quad x_0 \in A$

$$f \text{ CONTINUA in } x_0 \overset{\text{DEF}}{\iff} \forall J(f(x_0)),\ \exists I(x_0) : f(A \cap I) \subset J$$

$$\iff \forall \varepsilon > 0,\ \exists I(x_0) : \forall x \in A \cap I,\ |f(x) - f(x_0)| < \varepsilon$$

1) $x_0 \in A - D(A) \Rightarrow f$ CONTINUA in x_0

2) $x_0 \in A \cap D(A) \Rightarrow \left[f \text{ CONTINUA in } x_0 \iff \lim\limits_{x \to x_0} f(x) = f(x_0) \right]$

$$= f\left(\lim_{x \to x_0} x\right)$$

$$f \in \mathcal{C}^0(A) \overset{\text{DEF}}{\iff} f \text{ CONTINUA in } A \overset{\text{DEF}}{\iff} \forall x_0 \in A,\ f \text{ CONTINUA in } x_0$$

Es. 1 .- $f(x) = x$ CONTINUA in x_0, $\forall x_0 \in \mathbb{R}$

Es. 2 .- $f : x \in]-\infty, 0[\cup]0, +\infty[\longrightarrow x \operatorname{sen} \frac{1}{x}$

NON è CONTINUA in $x_0 = 0$, PERÒ SI HA:

$$\lim_{x \to 0} f(x) = 0$$