Teorema. *f differenziabile in x_0 $\iff$ f derivabile in x_0. In tal caso $\lambda = f'(x_0)$.*

Dim. $f(x) = f(x_0) + \lambda(x - x_0) + o(x - x_0)$ per $x \to x_0$

$$\iff \lim_{x \to x_0} \frac{f(x) - f(x_0) - \lambda(x - x_0)}{x - x_0} = 0 \iff$$

$$\lim_{x \to x_0} \frac{f(x) - f(x_0)}{x - x_0} = \lambda. \qquad \square$$

f derivabile in x_0

$$\Rightarrow \underbrace{f(x)} - \underbrace{\left(f(x_0) + f'(x_0)(x - x_0)\right)} = o(x - x_0), \; x \to x_0$$