CRITERI di ARRESTO

- dato $E > 0$: <u>se</u> $|f(x_k)| < E$ <u>allora</u> STOP

  * calcolabile
  * efficace: $x_k \to \alpha \Rightarrow f(x_k) \longrightarrow f(\alpha) = 0$
  * $f(x_k) - \cancel{f(\alpha)} = f'(\theta_k)(x_k - \alpha)$, θ_k tra x_k ed α

$$\varepsilon_k \equiv |f'(\theta_k)| - 1 \Rightarrow |f(x_k)| = (1 + \varepsilon_k)|x_k - \alpha|$$

$$\boxed{\underline{\text{se}} \ |f'(\alpha)| \approx 1 : \text{ok}, \ \underline{\text{altrim}} \ldots}$$

- dato $E > 0$: <u>se</u> $\dfrac{|f(x_k)|}{|f'(x_k)|} < E$ <u>allora</u> STOP

  * calcolabile
  * efficace: $\boxed{\text{se } f'(\alpha) \neq 0}$: $x_k \to \alpha \Rightarrow \dfrac{f(x_k)}{f'(x_k)} \longrightarrow \dfrac{f(\alpha)}{f'(\alpha)} = 0$
  * $f(x_k) = f'(\theta_k)(x_k - \alpha)$, θ_k tra x_k ed α

$$\Rightarrow \frac{f(x_k)}{f'(x_k)} = \frac{f'(\theta_k)}{f'(x_k)}(x_k - \alpha)$$

$$\varepsilon_k \equiv \left|\frac{f'(\theta_k)}{f'(x_k)}\right| - 1 \Rightarrow \left|\frac{f(x_k)}{f'(x_k)}\right| = (1 + \varepsilon_k)|x_k - \alpha|$$

$$\boxed{f'(\alpha) \neq 0} \Rightarrow \lim_{k \to \infty} \varepsilon_k = 0 : \text{ ok!}$$

CONVERGENZA in $F(\beta, m)$

TEO:
- $h, [a,b], x_0$ che verificano il Teo conv
- $\varphi : F(\beta,m) \to F(\beta,m)$ t.c.:

$$\forall \xi \in [a,b] \cap F(\beta,m): \ |\varphi(\xi) - h(\xi)| \leq \delta$$

- $\xi_k = \varphi(\xi_{k-1}) \in [a,b] \ , \ \forall k = 1, 2, \dots$

Allora:

(1) $$|\xi_k - \alpha| \leq L\, |\xi_{k-1} - \alpha| + \delta$$

(2) $$|\xi_k - \alpha| \leq L^k \left(|\xi_0 - \alpha| - \frac{\delta}{1-L} \right) + \frac{\delta}{1-L}$$

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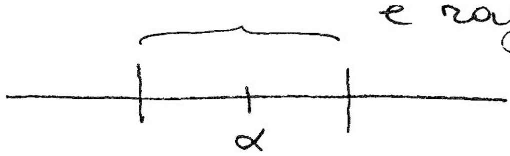
int di centro α
e raggio $\frac{\delta}{1-L}$



in $F(\beta,m)$ la success ξ_k
"converge" all'intorno