

This brings us to the practical question:

When to stop iterating?

Stopping criteria (SC):

$$(SC1) \quad |x^{(k)} - x^{(k-1)}| \leq \text{atol} \quad (\text{absolute-})$$

$$(SC2) \quad |x^{(k)} - x^{(k-1)}| \leq \text{rtol} \cdot |x^{(k)}| \quad (\text{relative-})$$

$$(SC3) \quad |x^{(k)} - x^{(k-1)}| \leq \text{tol} \cdot (1 + |x^{(k)}|) \quad (\text{hybrid-})$$

$$(SC4) \quad |f(x^{(k)})| \leq \text{ftol} \quad (\text{function-})$$

tolerance