Métodos Computacionais em Física

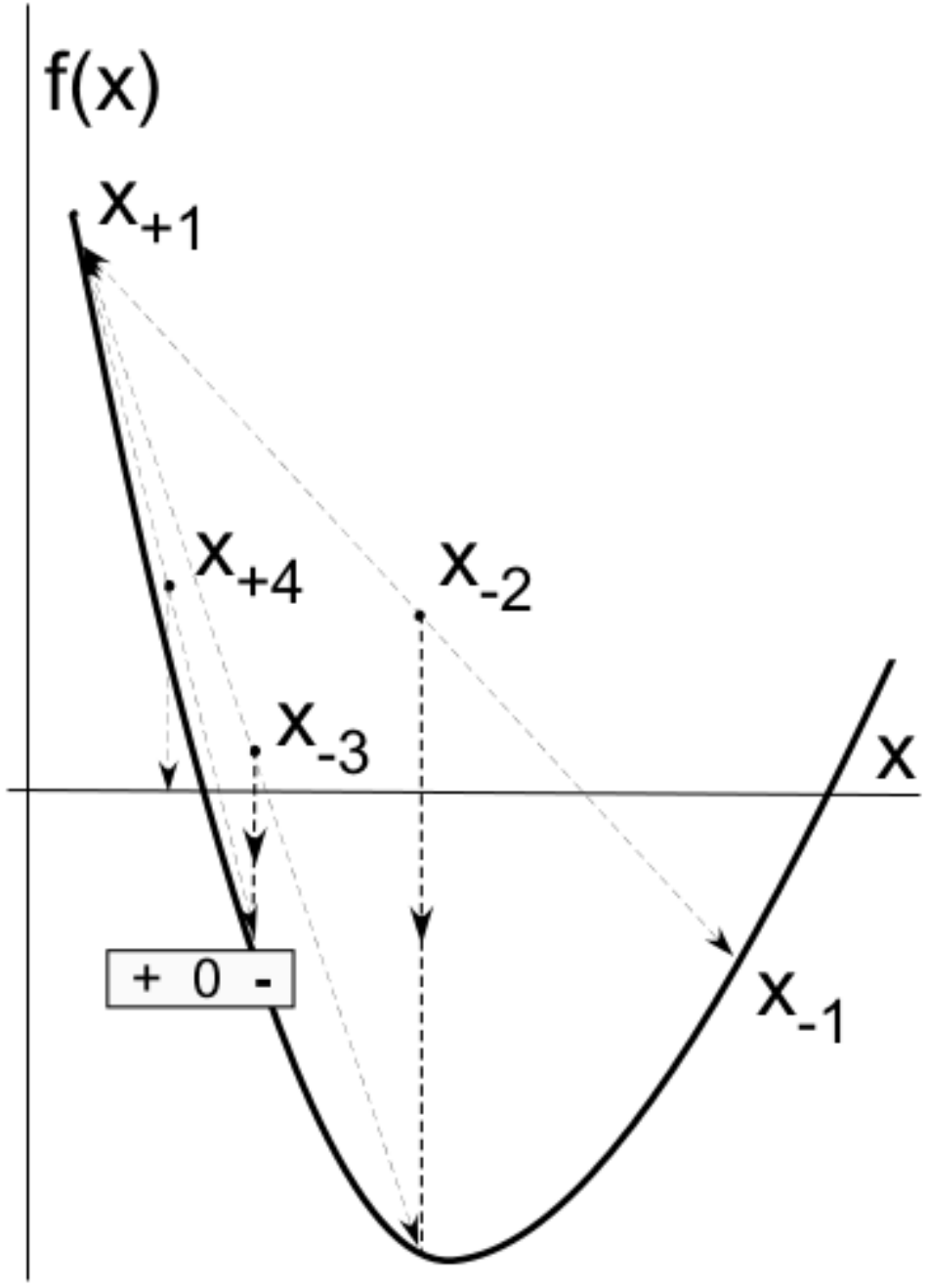
Aula 10

Procurando raízes

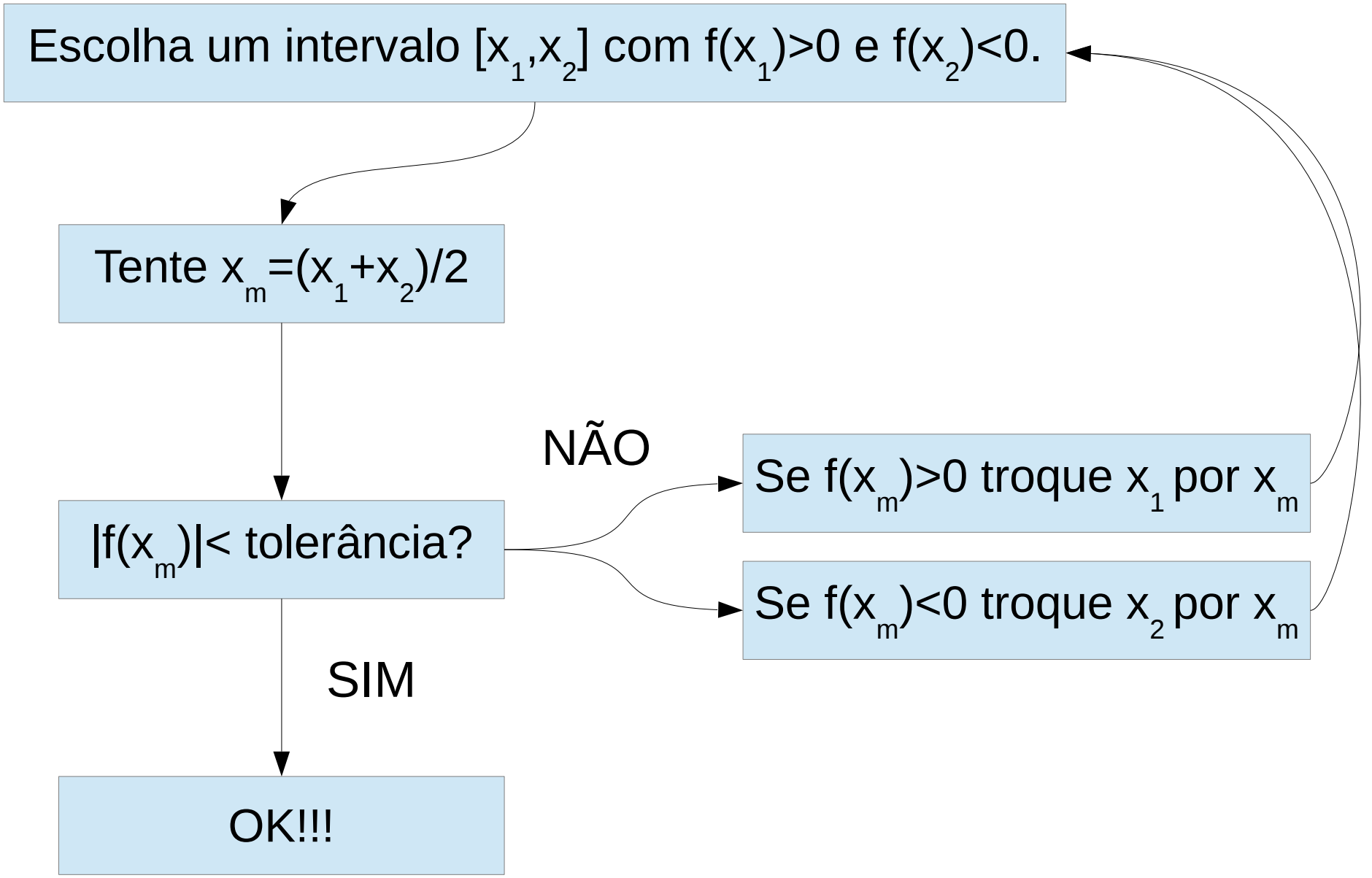
O problema

$$f(x) = 0 \quad \rightarrow \quad x = ?$$

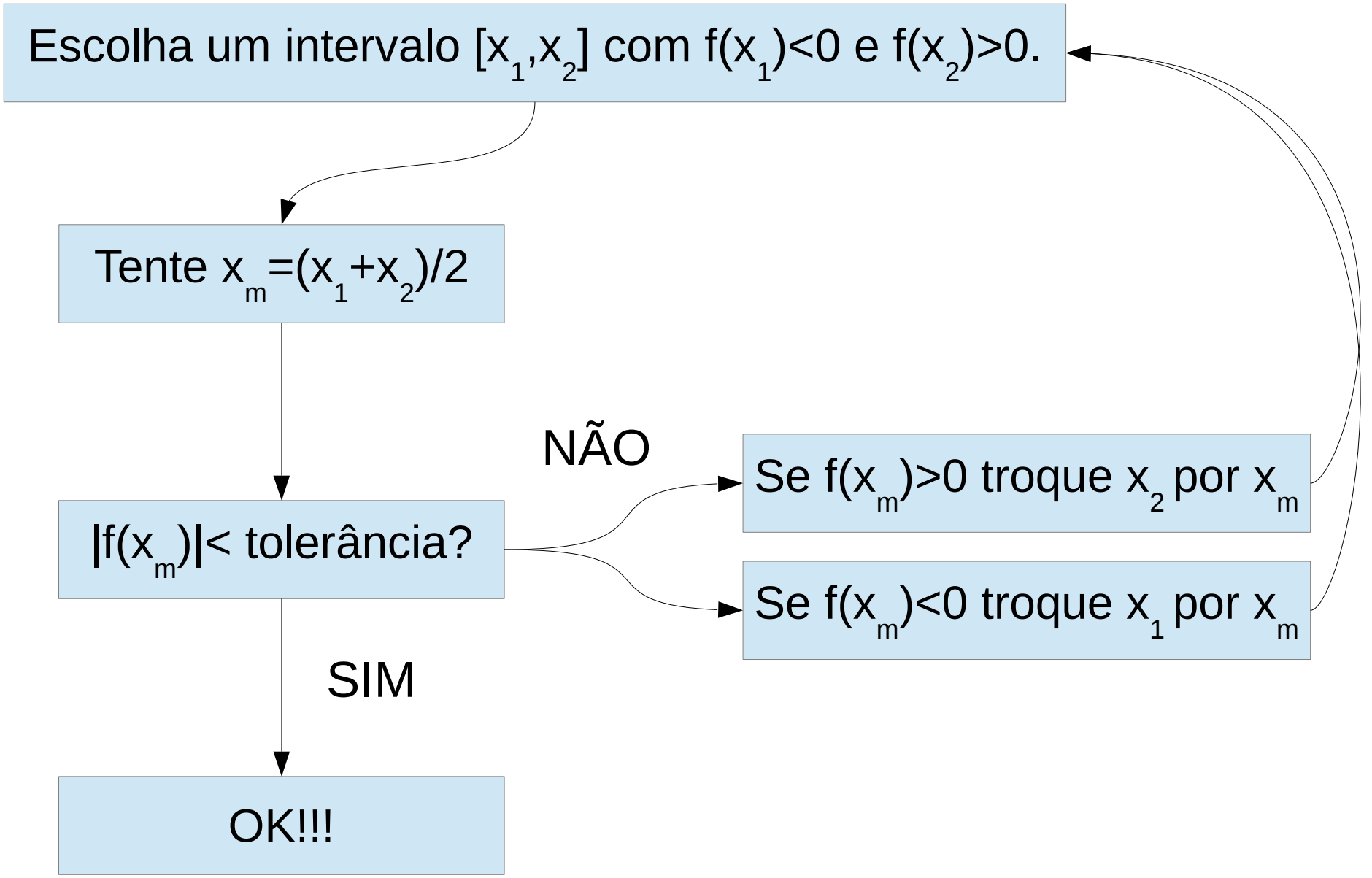
Método 1: bisecção



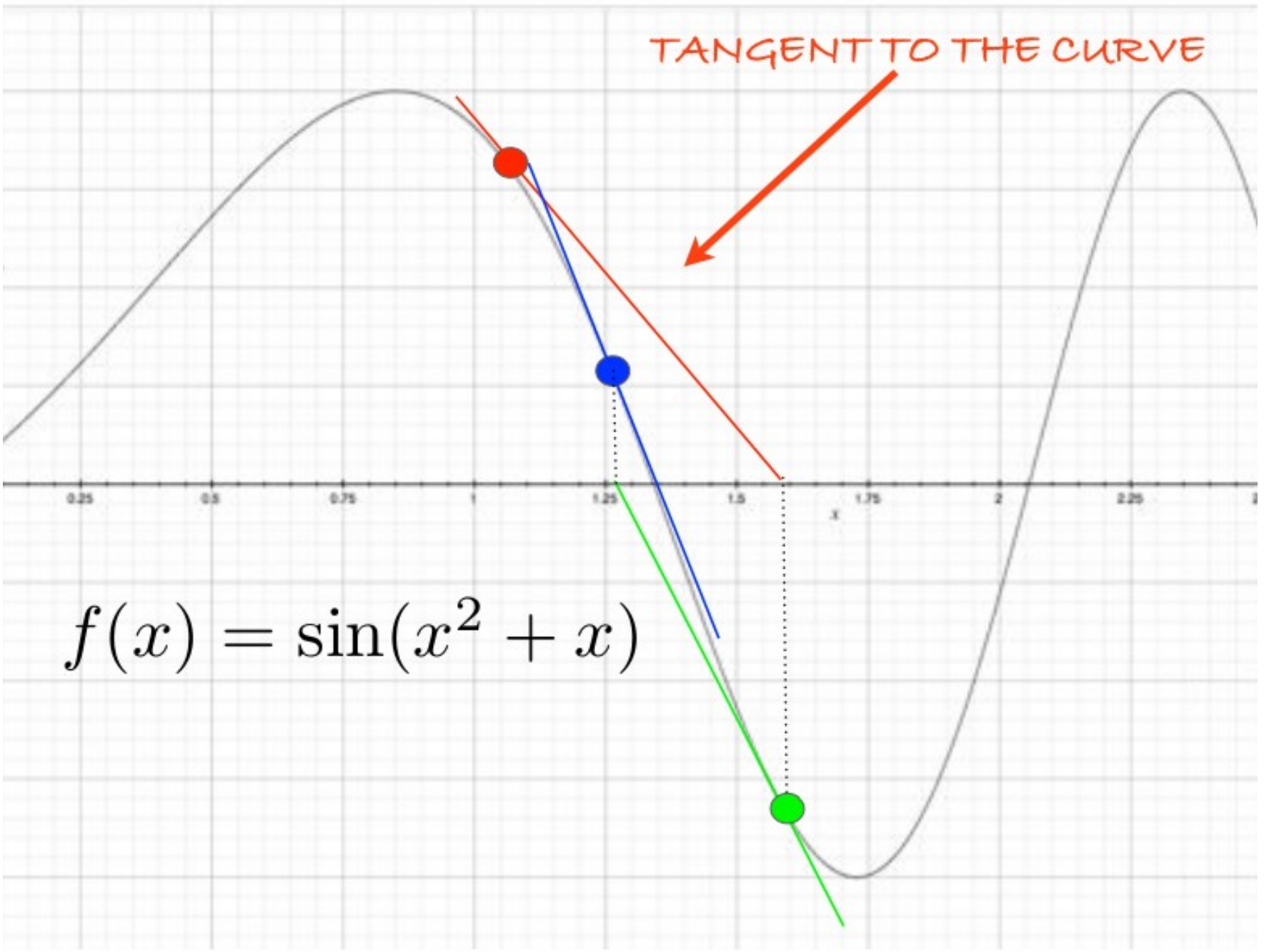
Método 1: bisecção



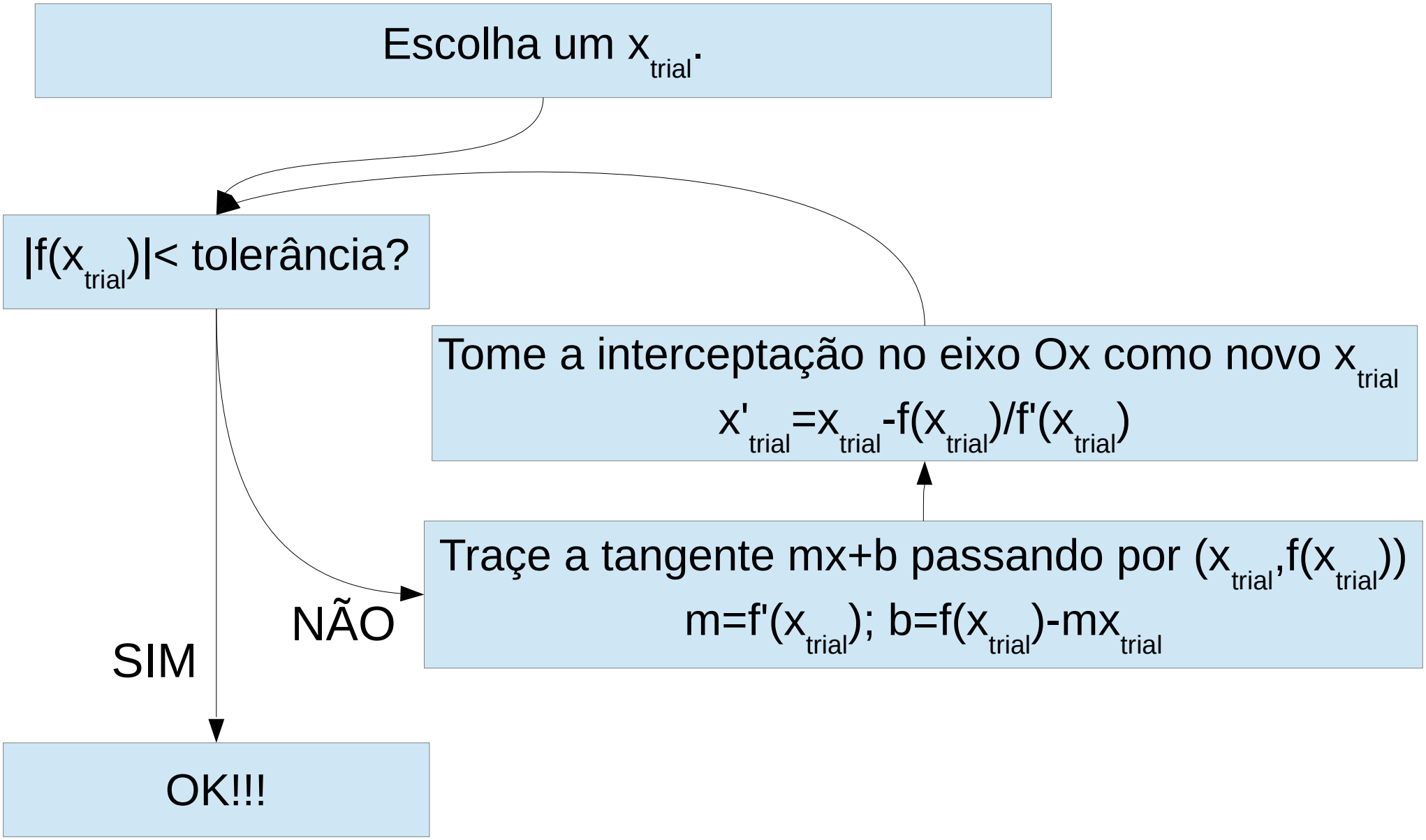
Método 1: bisecção



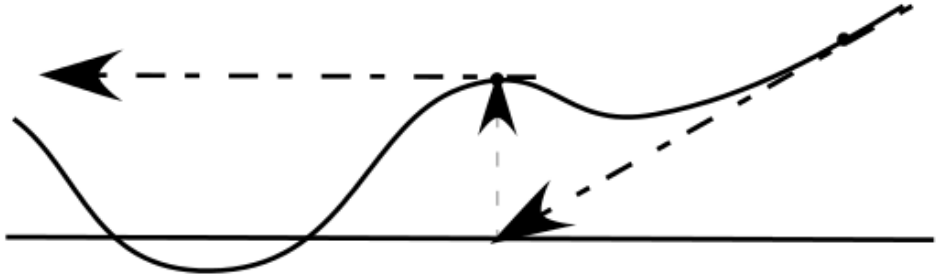
Método 2: Newton-Raphson

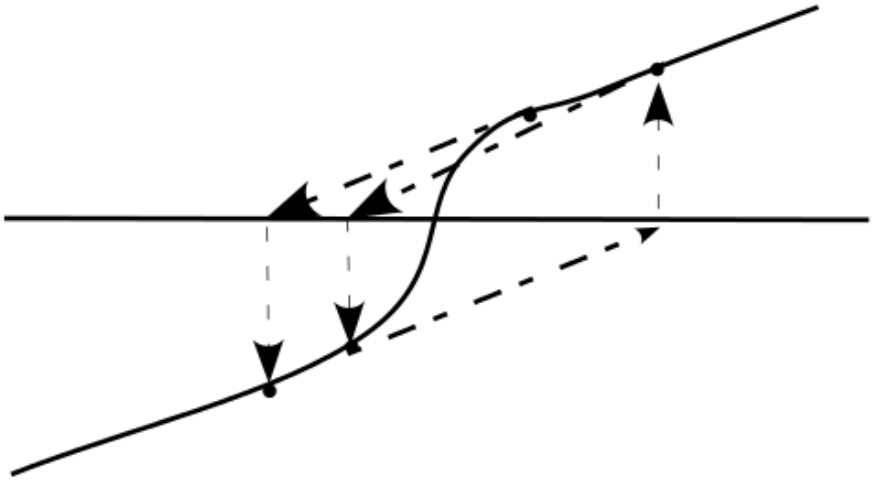


Método 2: Newton-Raphson



Método 2: Newton-Raphson
Possíveis Problemas





Método 2: Newton-Raphson Possíveis Soluções

- Se o módulo de $f(x_{trial})$ aumentar, utilize um passo menor para o próximo x_{trial}.
- Se o problema continuar, utilize um passo ainda menor.
- Use bisecção para obter um melhor x_{trial} inicial.

Hands on

- $f(x)=1-x^2-x.\tan(x)$
- $f(x)=1-x^2-\sin(x)$