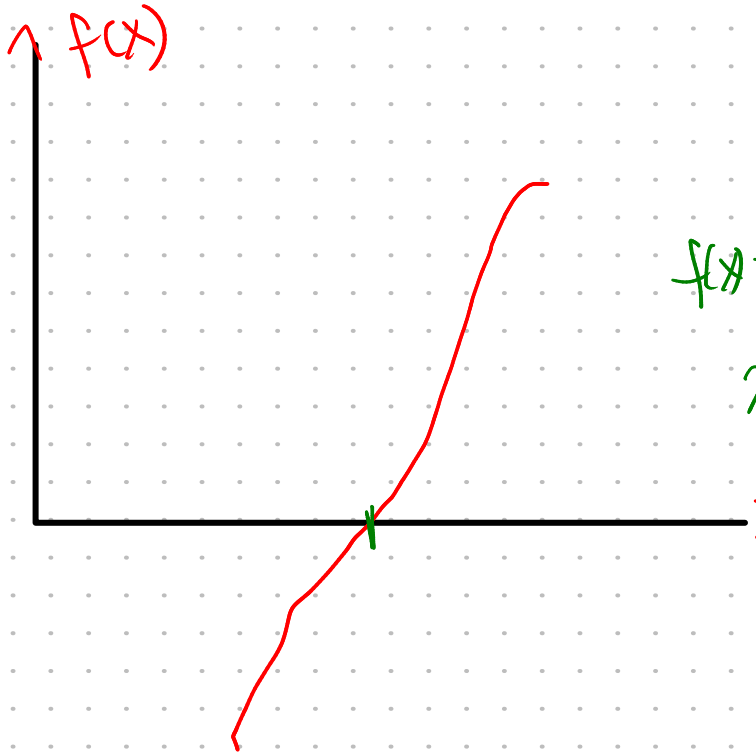
Metodos Numericos para Calculo de Raices.



$f(x) = 0$

$f(x) = x^2 + 2x + 3$

$x^2 + 2x + 3 = 0$

Método de Biseccion.

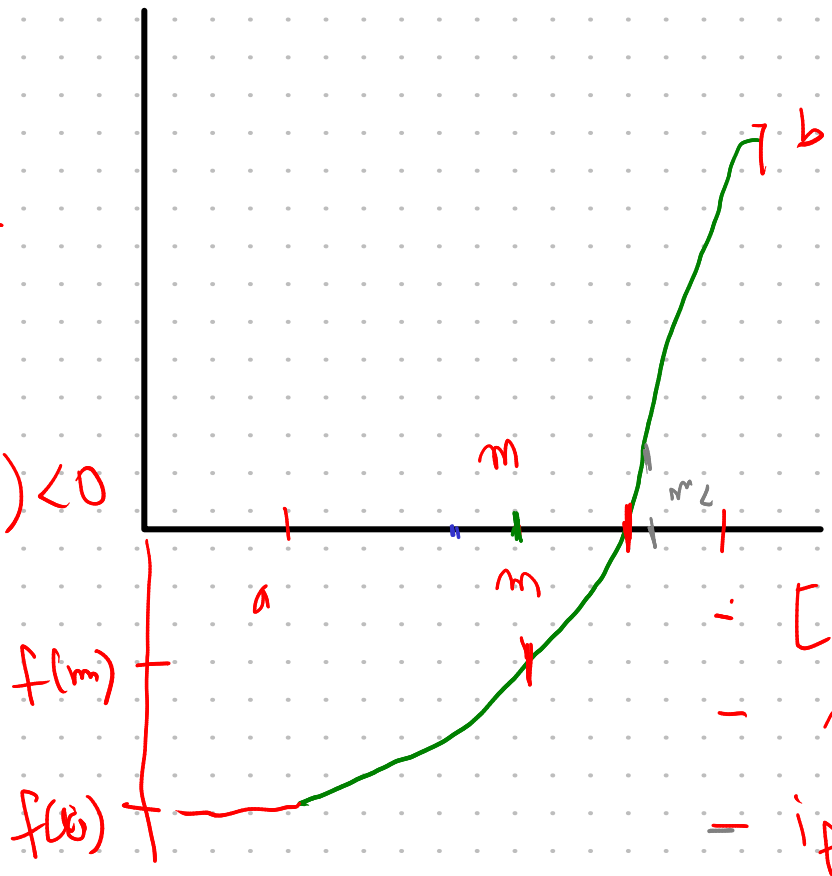
$m = \frac{a+b}{2}$

$f(m)$

$f(m)f(b) < 0$

$f(a)f(b) < 0$

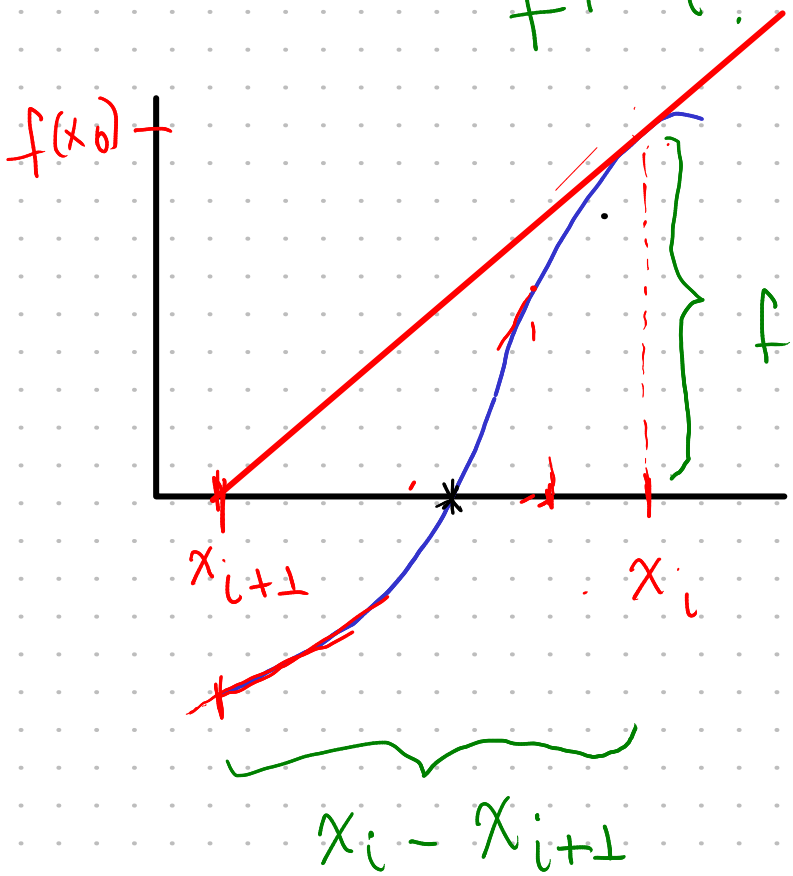
$Sign(f(a)) \neq Sign(f(b))$



- $[a, b]$
- $m = \frac{a+b}{2}$
- if $f(m)f(b) < 0$
  $a = m, b = b$
  else
  $a = a, b = m$

Método de Newton-Raphson

$$x_{i+1} = x_i - \frac{f(x_i)}{f'(x_i)}$$



$$\frac{f(x_i)}{(x_i - x_{i+1})} = f'(x_i)$$

$$f(x_i) = f'(x_i)\left(x_i - x_{i+1}\right)$$

$$\frac{f(x_i)}{f'(x_i)} = x_i - x_{i+1}$$

$$\boxed{x_{i+1} = x_i - \frac{f(x_i)}{f'(x_i)}}$$

Derivada.

$$f'(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{\Delta h}$$